633HC STEAM STERILIZER
USER MANUAL
61301607026 REV B US

GETINGE

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NOTE

This manual contains proprietary information of Getinge USA, Inc. It shall not be reproduced in whole or in part without the written permission of Getinge USA, Inc.

This manual is intended for qualified technicians with specialized training. If you require additional help, contact the company service representative.

WARNING

POSSIBILITY OF INJURY: Misuse of equipment or bypassing its safety features may result in personal injury.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Misuse of equipment may result in equipment damage.

POSSIBILITY OF DAMAGE TO EQUIPMENT: The 633HC Steam Sterilizer is designed to steam sterilize hospital goods and solutions. This equipment is NOT intended for use other than expressly stated.

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SPECIAL SAFETY INSTRUCTIONS

THE FOLLOWING SAFETY INSTRUCTIONS APPEAR WITHIN THIS MANUAL ON THE PAGES LISTED AFTER EACH WARNING. READ THEM CAREFULLY BEFORE OPERATING THE UNIT.

NOTE

"Warning" notes alert the user to the possibility of personal injury.

BURN/PINCH HAZARD: KEEP HANDS AND FINGERS AWAY FROM A MOVING DOOR. To stop the door direction if your hands or fingers are accidently caught in the door:

If the door is closing	Press one of the following: • [OPEN DOOR] • [CANCEL] • CONTROLS OFF/ON
If the door is opening	Press one of the following: • [CLOSE DOOR] • [CANCEL] • CONTROLS OFF/ON

p. 4–6, **p. 4–7**

CREUTZFELDT-JAKOB DISEASE (CJD) DECONTAMINATION:
It is the responsibility of the facility to establish internal policies and procedures relative to processing instruments that have or may have been exposed to CJD. If instruments exposed to CJD are processed in accordance with the World Health Organization (WHO) Infection Control Guidelines for Transmissible Spongiform Encephalopathies (TSE), there are:

POTENTIAL HAZARDS TO USERS AND REPAIR PERSONNEL:

- Be sure to wear personal protective equipment (PPE) when handling NaOH liquids.
- Heated NaOH liquids have the potential to injure personnel who handle the containers.
- Heated NaOH liquids can emit fumes that can be corrosive to eye tissue and can cause respiratory distress.
- Cleaning residual NaOH from the chamber interior could lead to skin burns and the production of NaOH aerosol mist.

p. 4–10

POSSIBILITY OF INJURY: Observe the following loading recommendations:

- The rack can support a maximum load of 100 lb. An individual shelf can hold up to 50 lb, evenly distributed. Up to 4 shelves can be placed on the rack as long as the total maximum weight of 100 lb is not exceeded.
- Do not place more than 20 lb on the end of an extended shelf.
- Liquid loads (hot or cold) should never be placed on an extended shelf.
- Do not extend a shelf with liquid loads (hot or cold).

p. 4–20

BURN HAZARD/SHOCK HAZARD: Before performing any maintenance on the boiler, allow the boiler to cool down and disconnect the electrical power at the source. **p. 8–10**

BURN HAZARD: Before removing a load from the chamber, unseal the door and wait about a minute for the steam to vent before opening the door. Stand back to avoid possible burns when lowering the door. **p. 4–6, 4–27, 4–40, 4–51**

BURN HAZARD: Flash sterilized unwrapped instruments could still be hot at the end of the cycle. These instruments could burn the patient if used immediately in surgical procedures. Use personal protective equipment when removing these items from the sterilizer and allow sufficient time for them to cool before using them in surgical procedures. **p. 4–13, 4–18, 4–20, 4–28, 5–12, 5–15**

BURN HAZARD: Hot steam can cause serious injury. DO NOT attempt to open the sterilizer chamber door unless the CHAMBER pressure gauge on the front panel reads zero (0 psig) or less (negative). **p. 4–40, 4–46**

BURN HAZARD: Hot steam can cause serious injury. View the CHAMBER pressure gauge while the steam bleeds from the chamber. Wait until the CHAMBER pressure gauge reads zero (0 psig) or less (negative) before operating manual valves. **p. 4–40, 4–42**

BURN HAZARD: The door and chamber area could be HOT enough to cause burns. Wear personal protective equipment (PPE) when loading and unloading the chamber. **p. 4–6, 4–22, 4–27, 4–30, 4–34**

BURN HAZARD: The drain valve is hot. Wear protective gloves. **p. 8–4, 8–7**

BURN HAZARD: To avoid injury, DO NOT turn ON the manual valve labeled “STEAM TO DOOR(S)” with the chamber door open. **p. 4–52**

BURN HAZARD: To avoid injury, DO NOT turn the manual valves with the chamber door open. **p. 4–40**

FIRE HAZARD: Loose electrical connections may result in an electrical fire. When performing periodic maintenance, check that the heating elements, element flange bolts, contactors, and three-phase supply terminal block are torqued to the values specified in the Technical Manual (61301607028). **p. 8–10**

HOT SURFACES: The chamber and sediment drain screens may be hot. Allow them to cool before attempting to remove them for cleaning. **p. 7–3**

HOT SURFACES: The chamber and the gasket area could be HOT. Turn OFF the controls and make sure the sterilizer is cool before cleaning the gasket or removing the sediment screen for cleaning. **p. 4–2**

HOT SURFACES: The loading car may be hot enough to cause burns. Wear protective gloves and eyewear when loading and unloading the chamber. **p. 4–14, 4–18**

HOT SURFACES: The loading car or rack and shelves may be hot enough to cause burns. Wear protective gloves and eyewear when removing the load from the chamber. **p. 4–27**

HOT SURFACES: The pipes on the outside of the chamber may be hot! Avoid touching the pipes when opening and closing the bleed valves. **p. 4–40, 4–42**

HOT SURFACES: The rack and shelves may be hot enough to cause burns. Wear protective gloves when extending the shelves out of the chamber. **p. 7–8, 7–9**

HOT SURFACES: The rack and shelves may be hot enough to cause burns. Wear protective gloves when loading and unloading the chamber. **p. 4–20**

HOT SURFACE: If the sterilizer is ON, the chamber headring, which houses the gasket, could be hot. Allow the headring to cool before cleaning the door gasket. **p. 7–5**

HOT SURFACE: Make sure the sterilizer chamber is cool before attempting to clean the interior surfaces. **p. 7–4**

HOT SURFACE: The chamber and sediment drain screens may be hot. Allow them to cool before attempting to remove them for cleaning. **p. 7–2**

POSSIBILITY OF INJURY: After completion of a liquids cycle, remove the container carefully, taking care not to agitate the liquid. If the load is agitated when removed from the chamber, the container may burst or crack. **p. 4–27**

POSSIBILITY OF INJURY: Before transporting liquid loads, make sure the side rails are installed on the loading cart. If the side rails are not installed, the liquid containers could fall off the loading cart and spill or break. **p. 4–14**

POSSIBILITY OF INJURY: Do not operate the door while loading or unloading the sterilizer. **p. 4–6, 4–22, 4–27**

POSSIBILITY OF INJURY: If a condition exists OTHER THAN an electrical outage, call qualified service personnel before operating the sterilizer. Failure to do so may result in personal injury. **p. 4–41, 4–52**

POSSIBILITY OF INJURY: If a WATER IN DRAIN message displays, DO NOT operate the chamber door. Hot water in the chamber may spill if the door is opened. Wait until the message clears before attempting to open the door. **p. 4–26, 4–41, 4–42, 6–3, 6–13**

POSSIBILITY OF INJURY: If the wrong cycle is selected for a liquid load, the containers may burst or crack during processing. **p. 4–23**

POSSIBILITY OF INJURY: Manual mode is intended for use by qualified service personnel to check the function of individual outputs. Attempting to operate the sterilizer when any output is set for manual operation may result in possibly dangerous conditions. **p. 6–14**

POSSIBILITY OF INJURY: Opening the door manually requires retracting the door gasket, which should be performed by qualified service personnel only. This procedure requires access to the service side of the equipment. **p. 4–40**

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled. **p. 3–12, 4–2, 4–6, 4–22, 4–27, 4–30, 4–34, 4–41, 7–2, 7–3, 7–4, 7–5**

POSSIBILITY OF INJURY: Retracting the door gasket manually should be performed by qualified service personnel only. This procedure requires access to the service side of the equipment. **p. 4–42**

POSSIBILITY OF INJURY: Steam boiler maintenance should be performed only by qualified personnel following the procedures in the 600 Series Technical Manual (61301607028). **p. 8–10**

POSSIBILITY OF INJURY: The liquids cycle is NOT intended for the sterilization of liquids intended for direct patient contact. **p. 4–9**

POSSIBILITY OF INJURY: The loading car can hold a total maximum load of 440 lb. The shelves on the car are able to hold a maximum of 275 lb evenly distributed on each shelf, but the total weight of 440 lb on the car must not be exceeded. To avoid injury or equipment damage, do not exceed these weight limits. **p. 4–14**

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers. **p. 4–7, 4–9, 4–11, 4–22, 4–23, 4–28, 4–30, 4–34, 4–39, 4–41**

POSSIBILITY OF INJURY: Wear protective eyewear, clothing, and gloves when handling liquids in containers. **p. 4–22, 4–27**

RISK OF INFECTION: Airborne microbial and particulate contamination is likely to be high in the decontamination area of the sterile processing department. Wear appropriate personal protective equipment (PPE) when preparing items for cleaning. **p. 4–9, 4–30, 4–34, 4–40**

RISK OF INFECTION: The liquids cycle is NOT intended for the sterilization of liquids intended for direct patient contact. **p. 5–16**

RISK OF NON-STERILE DEVICE AND POSSIBILITY OF INJURY: Before pressing START, verify that the appropriate cycle is selected for the load being processed. **p. 4–23**

RISK OF NON-STERILE DEVICE: After removing wrapped goods from the chamber, inspect for residual moisture (wet packs). Moisture on or within a package can potentially create a pathway for migration of microorganisms from the outside to the inside of a sterilized package. **p. 4–27**

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods). **p. 3–4, 4–6, 4–9, 4–23, 4–25, 4–27, 4–30, 4–32, 4–33, 4–35, 4–39, 4–40, 6–1, 6–4, 6–8, 6–13, 6–15**

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods). **p. 4–6, 4–23, 4–25, 4–27, 4–39, 4–40, 6–1, 6–5, 6–6, 6–8**

RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods). **p. 4–6, 4–23, 4–25, 4–27, 4–38, 4–40, 6–2, 6–8, 6–12**

RISK OF NON-STERILE DEVICE: If the wrong cycle is selected, the desired sterility assurance level (SAL) may not be reached. **p. 4–23**

RISK OF NON-STERILE DEVICE: The recommended minimum exposure time and temperature for unwrapped non-porous flash cycle loads (e.g., metal instruments) is 3 minutes at 275°F (135°C). **p. 4–11, 4–13, 5–12**

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters. **p. 5–1, 5–5, 5–9, 5–12, 5–15, 5–18, B–9, B–21, B–22, B–25, B–28, B–30, C–1**

SHOCK HAZARD: Disconnect all electrical supply circuits to ensure that the sterilizer components will not be energized prior to the performance of required adjustments and testing. **p. 4–42**

SHOCK HAZARD: To disconnect all power, turn OFF the sterilizer at the mains circuit breaker. CONTROLS OFF/ON does not remove primary power from the sterilizer. **p. 2–4**

SECTION 1 PREFACE

Before operating the sterilizer, please read all the instructions and become familiar with the sterilizer's design, safety features, and operation.

This manual is intended to provide the knowledge to:

- ensure safe equipment operation with optimal efficiency
- select the appropriate cycle for the load to be sterilized
- handle any nonstandard task, such as assigning passwords
- assist with routine maintenance

This manual is intended for users, supervisors, and qualified maintenance personnel in the operation of the 633HC Steam Sterilizer. If additional help is required, contact a qualified Getinge service representative.

The following documentation is supplied with the machine:

- *User Manual (61301607026)*
- *Installation Manual (61301607027)*
- *Quick Reference Poster (61301607268)*

The following documentation is available for purchase:

- *Technical Manual (61301607028)*
- *Parts Catalog (61301607029)*

Getinge reserves the right to make changes to specifications and equipment without prior notice. The information contained within this manual is current as of the date of issue.

SUMMARY OF CONTENTS

This manual is divided into 13 sections as follows:

- Section 1, "Preface"—includes information regarding the intended audience and a summary of the contents of the manual
- Section 2, "Safety"—includes all information concerning important safety issues when using or servicing the sterilizer
- Section 3, "Introduction"—includes information regarding symbols used within this document and on the equipment as well as basic navigation concepts
- Section 4, "Operation"—includes information regarding daily checks, load preparation, and basic operating instructions

- Section 5, “Process Descriptions”—includes factory set parameters and information regarding cycle parameters and functions
- Section 6, “Troubleshooting Guide”—includes information regarding error messages and fault analysis
- Section 7, “Routine Maintenance”—includes information regarding periodic maintenance performed by the user/technician
- Section 8, “Optional Equipment”—includes information regarding options available for the sterilizer
- Appendix A, “Consumable Stock and Spare Parts”—includes part numbers of parts and consumables that should be kept on hand
- Appendix B, “Supervisor Functions”—provides information and instructions for situations that may develop that are not part of standard sterilizer operation; includes the cycle assignments table
- Appendix C, “Parameter Check Feature”—provides a visual means of determining whether a specific cycle setting is above the parameter check limit
- Appendix D, “Menu Tree”—provides a graphic representation of the user interface
- Glossary—provides written definitions of product or process related terms used in this manual

ENVIRONMENTAL IMPACT ASSESSMENT

The 633HC Steam Sterilizer contains stainless steel, copper, electronic, and electrical components, which can be recycled at the end of the unit’s lifecycle. The sterilizer also contains plastic and batteries that are in the electronic boards, as well as cadmium in batteries, which can NOT be recycled and should be disposed of in accordance with local and federal regulations.

MANUAL CONVENTIONS

Before you begin using this manual, it is important to understand the conventions used. These conventions are established for visual ease of use.

[ALL UPPERCASE IN BRACKETS]	Softkeys on the control panel, such as [CANCEL] or [OK]
ALL UPPERCASE WITHOUT BRACKETS	Switches and indicators on the control panel, such as ENTER
>	Leads you through nested menu items and dialog box options to a final action, for example: Select SYSTEM MENU > enter password > TIME SETTINGS.
Italics	Alarm and informational messages in the display window, such as the *AIR IN SLOW* fault condition Cross reference to another manual or guide, for example: See *AAMI Standard ST79*.
PARAMETER SETTINGS ACCESS REQUIRED	An alert that a password with appropriate access rights is necessary to proceed

SYMBOLS USED IN THIS MANUAL

The following symbols with related notes appear in this manual.

"Warning" alerts the user to the possibility of personal injury.

"Caution" alerts the user to the possibility of damage to the equipment.

"Note" alerts the user to pertinent facts and conditions.

DESCRIPTIONS OF THE SYMBOLS ON THE EQUIPMENT

The following symbols and definitions represent the switches, indicators, and labels found on the unit.

SWITCHES

OPEN DOOR (also used to unseal the door)

CLOSE DOOR (also used to seal the door

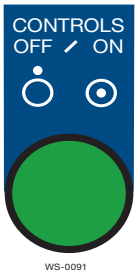
CLEAR ALARM

START

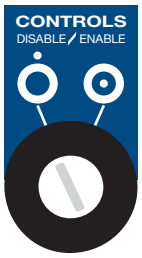
Directional arrows (for navigating display screens)

ENTER

Softkeys (for selecting softkey options, such as Save, Cancel, and OK)



CONTROLS OFF/ON



CONTROLS DISABLE/ENABLE

To enable the controls, insert the key and turn it to ENABLE.

To disable the controls, turn the key to DISABLE. Remove the key to avoid unauthorized operation.

INDICATORS

DOOR(S) CLOSED

DOOR(S) SEALED

IN PROCESS

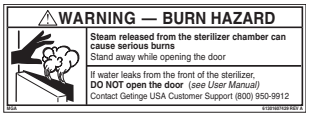
PROCESS COMPLETE

PROCESS FAILURE

LABELS

The following labels on the sterilizer alert personnel to possible hazards.

BURN HAZARD: Hot surfaces or heat-emitting area. Avoid contact. Risk of burns.


WARNING — BURN HAZARD
Steam released from the sterilizer chamber can cause serious burns
Stand away while opening the door
If water leaks from the front of the sterilizer,
DO NOT open the door (see User Manual)
Contact Getinge USA Customer Support (800) 950-9912

WARNING—BURN HAZARD: Steam released from the sterilizer chamber can cause serious burns. Stand away while opening the door.

WARNING: Do not enter chamber without disabling controls. Processing a type of load other than defined in User Manual could be hazardous.

The following labels on the control box and power box alert service personnel to possible hazards.

HIGH VOLTAGE

CAUTION: To reduce the risk of electrical shock, do not remove the cover. Refer servicing to qualified service personnel.

ATTENTION: See the accompanying documents for further information.

ATTENTION: Observe precautions for handling electrostatic sensitive devices.

SECTION 2 SAFETY

GENERAL

The 633HC Steam Sterilizer is designed to sterilize and dry (where applicable) typical health care goods. The sterilizer includes pressure pulse gravity steam, pressure vacuum pulsing, and liquids cycles. This sterilizer is NOT intended for use other than expressly stated.

This sterilizer is designed with a number of built-in safety devices. To avoid injury, it is very important that these safety devices are not bypassed or disabled.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Follow the instructions in this manual to ensure the safe and efficient performance of the sterilizer. Failure to comply with these instructions or to provide specific services could void the warranty.

READ THE MANUAL

- Read all instructions thoroughly before use.
- Before repair or service work is performed, service personnel must study the manuals and documentation.

AUTHORIZED PERSONNEL ONLY

- Read all instructions thoroughly before operating the sterilizer.
- Service work must be performed by qualified personnel trained on this equipment.
- The sterilizer must be operated by personnel who know about it and are trained on its use. Personnel must also receive periodic training on this equipment.
- Personnel must receive periodic training on the operation and maintenance of this equipment in accordance with established procedures for the workplace.

CHEMICAL SAFETY

- Take care when handling any chemical agent used in and around the sterilizer. Read all details on the container or contact the manufacturer:
  - if any agent comes into contact with the operator's eyes or skin, or if the vapors are breathed in
  - about storing the agent and disposing of empty containers
- Take care when using corrosive detergents, such as Getinge Stainless Steel Chamber Cleaner or Getinge Schedule 7 Chamber Cleaner.

ELECTRICAL SAFETY

- The front panels and electrical enclosures may be opened only by authorized and trained personnel. Be sure to switch OFF the electric power before opening front panels and any electrical enclosures. The electrical enclosures may contain 24 V, 115 V, 230 V, and three-phase voltage electrical components.
- Do not touch cables or electrical equipment in the service area.
- The sterilizer must be connected in accordance with the installation instructions and local safety codes.
- Before welding begins on or close to the sterilizer, all wiring connected by plugs and sockets must be disconnected from all circuit boards of the control system.

LOCKOUT

- Always keep the door to the service area locked.
- No personnel should be in the service area while the sterilizer is running.
- Never bypass the door limit switches of the sterilizer.
- When servicing the unit, CONTROLS DISABLE/ENABLE should be set to DISABLE. Remove the key and keep it with you.

HOT SURFACES

- There are hot surfaces in the service area. Never touch any piping that could contain steam.
- The sterilizer uses hot water and steam, which have the potential of causing burns or serious injuries. Wear personal protective equipment suitable for hot water and steam.

OTHER CONSIDERATIONS

- Leakage in the system, due to a worn door seal for example, must be repaired without delay.
- The sterilizer must be kept clean to ensure optimum performance.
- Do not hose down the outside of the sterilizer with water.

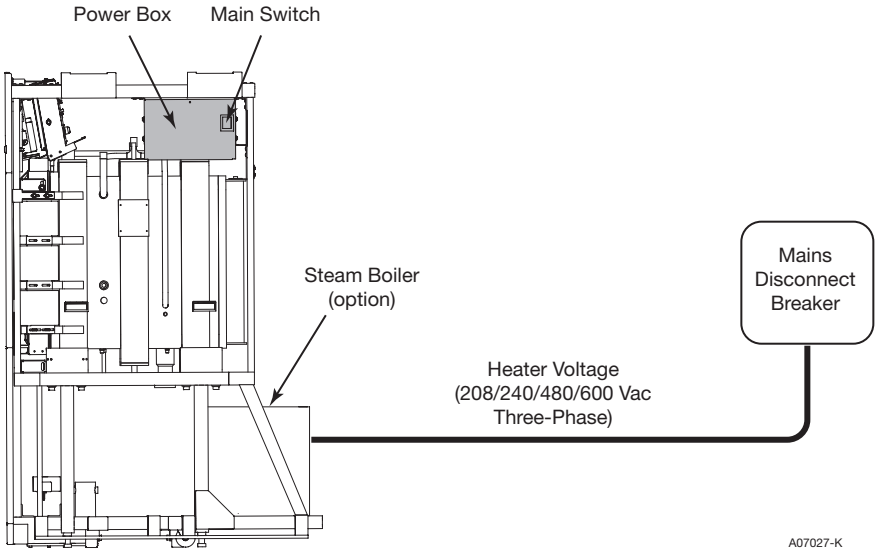
PRODUCT LIABILITY

Modifications to the equipment without the express approval of the manufacturer, or incorrect use of the unit invalidates the manufacturer's product liability.

ISOLATING DEVICE

The sterilizer is fitted with a main switch on the power box. The box is located on the right side of the sterilizer.

FIGURE 2–1. CIRCUIT BREAKER LOCATION



NOTE

Units with boilers are powered by a three-phase circuit that requires a separate mains disconnect. The boiler has its own circuit breaker.

SAFETY FEATURES

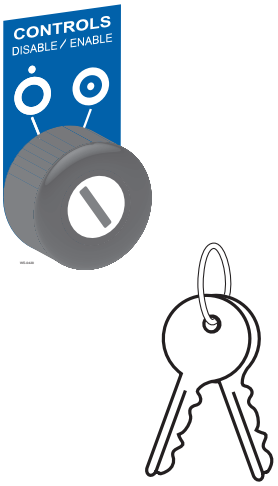
WARNING

SHOCK HAZARD: To disconnect all power, turn OFF the sterilizer at the mains circuit breaker. CONTROLS OFF/ON does not remove primary power from the sterilizer.

DOOR LOCKOUT

The door can be locked in the open position for maintenance inside the chamber. Turn the key to DISABLE and remove it. To prevent someone from closing the door during maintenance, keep the keys with you.

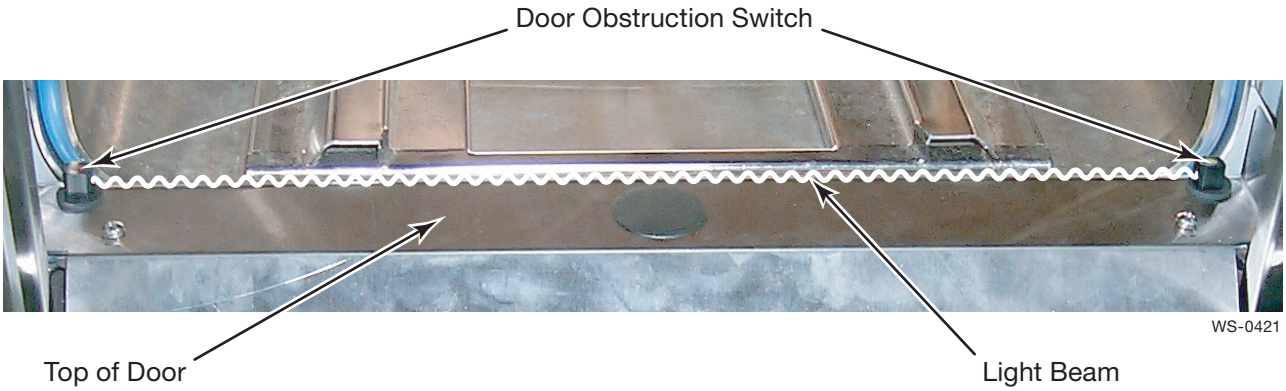
FIGURE 2–2. LOCKING THE DOOR IN THE OPEN POSITION



DOOR OBSTRUCTION SWITCH

The sterilizer uses a light beam switch at the top of the door to sense when an object is in the path of the movement of the door. When the light beam is broken as the door is closing, the door stops then reverses direction for 2 seconds.

FIGURE 2–3. DOOR OBSTRUCTION SWITCH



SECTION 3 INTRODUCTION

The 633HC Steam Sterilizer is designed to steam-sterilize hospital goods that are heat and moisture stable. Typical load types include:

- non-porous hard goods, including instruments, basins, cups, tools, test tubes, and glassware
- wrapped/unwrapped porous goods, including cloth, towels, gowns, and sheets
- wrapped porous goods, including instruments, basins, and tools
- non-flammable/non-volatile liquids in self-venting or open containers

  The liquids cycle is not intended for sterilization of liquids intended for patient contact.

The following information is covered in this section:

Topic	Page
Models	3–2
Controls and Indicators	3–3
Control Panel Navigation	3–7
Softkeys	3–10
Disabling or Enabling the Controls	3–12
Turning the Controls ON or OFF	3–13
Navigation Basics	3–13
Operating the Printer	3–17
Reading the Cycle Printout	3–23

MODELS

The 633HC Steam Sterilizer models and cycle types are listed in Table 3–1 and the vessel dimensions are listed in Table 3–2. See Figure 3–1 for a picture of the unit.

TABLE 3–1. STEAM STERILIZER MODELS AND CYCLE TYPES

Model	Sterilizer Type	Cycle Types Available
633HC	vacuum/gravity	prevacuum, gravity, flash, liquids, Bowie and Dick test, and vacuum leak test

TABLE 3–2. VESSEL DIMENSIONS

Height	Width	Chamber Length
26 in. (672 mm)	26 in. (672 mm)	26 in. (660 mm)
		39 in. (1000 mm)
		51 in. (1300 mm)

FIGURE 3–1. 633HC STEAM STERILIZER

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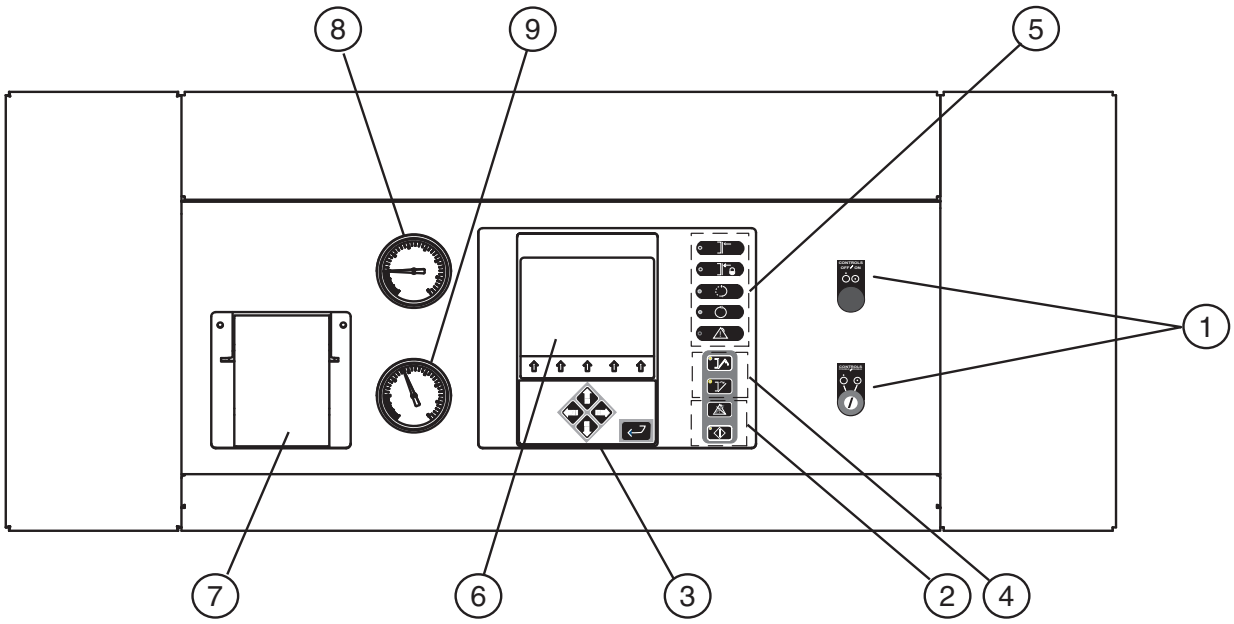
CONTROLS AND INDICATORS

For operational convenience, the sterilizer has an angled primary control panel on the control end (CE) of the unit. This panel contains a color graphic display; status indicators; and cycle, door control, and programming switches. Figure 3–2 is an illustration of the primary control panel.

FIGURE 3–2. STERILIZER CONTROL PANEL



WS-0241 633HC

1. Controls:
   - CONTROLS DISABLE/ENABLE disables the control panel (preventing door movement during maintenance procedures).
     – Sterilizer controls are functional when the key is turned to ENABLE (key is in the lock).
     – Sterilizer controls are not functional when the key is turned to DISABLE and removed.

NOTE
When servicing the unit, set CONTROLS DISABLE/ENABLE to DISABLE; remove the key and keep it with you.

WS-0091

- CONTROLS OFF/ON turns the sterilizer controls OFF and ON.
  – Sterilizer controls are ON when the push button is pressed in and illuminated.
  – Sterilizer controls are OFF when the push button is released and the button is not illuminated.

NOTE

If the CONTROLS OFF/ON button is illuminated and the backlight display is blank (the display is in screen saver mode), press any button (e.g., up arrow or ENTER) on the control panel to turn ON the display backlight. To adjust the screen saver delay value, see "Screen Saver" on page B–50.

If the CONTROLS OFF/ON button is pressed during a cycle, the cycle aborts. This is not the recommended method to abort a cycle manually. To abort a cycle manually, see "Canceling a Cycle (Manual Abort)" on page 4–30.

See "End of Cycle Routine" on page 4–25 any time a cycle is aborted.

WARNING

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

2. Cycle switches:

- START begins the selected processing cycle.

- CLEAR ALARM clears display messages and silences any alarm. See "Display Messages" on page 6–1.

3. Programming switches:

- Directional (up, down, left, and right arrow) switches
  - select a cycle; see "Previewing and Selecting a Cycle" on page 4–3
  - enter a password; see "Entering a Password" on page B–2
  - change adjustable cycle parameters; see "Editing Cycle Parameters" on page B–20
  - navigate the menus; see "Menu Options" on page B–4

- ENTER enables or stores selections in memory.

- Up arrow softkeys initiate various actions, depending upon the cycle or cycle phase. The softkey labels appear above the five arrow softkeys. See "Softkeys" on page 3–10.

4. Door control switches:

- CLOSE DOOR

  Press the switch to close the door. Press the switch a second time to seal the door.

- OPEN DOOR

  Press the switch to unseal the door. Press the switch a second time to open the door. See “Operating the Sterilizer Door” on page 4–6.

5. Status indicators:

- DOOR(S) CLOSED indicates the door is closed, but not sealed (or both doors are closed, but not sealed on a double door unit).

- DOOR(S) SEALED indicates the door is sealed (or both doors are sealed on a double door unit).

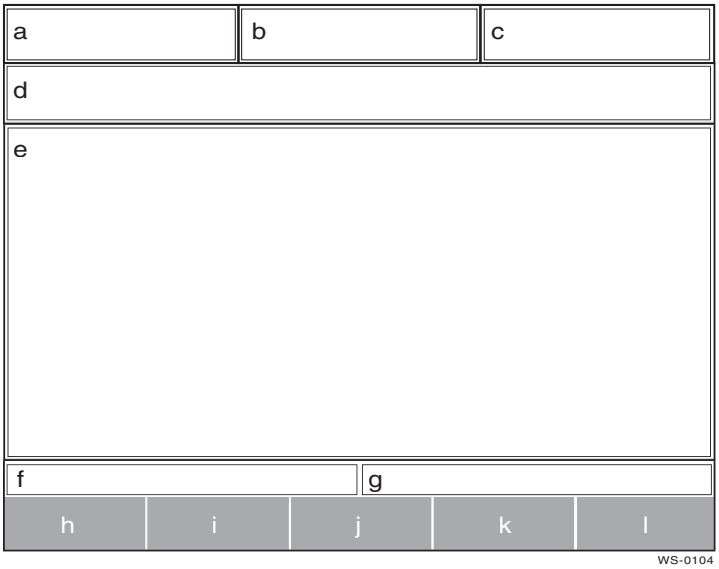
- IN PROCESS indicates a cycle is in progress.

- PROCESS COMPLETE indicates the cycle is complete (green light) or the cycle is aborted (flashing red light).

- PROCESS FAILURE indicates (flashing red light) that the controls aborted a cycle automatically due to a process failure, equipment malfunction, or failure while in standby.

6. The display window is the interface between the user and the sterilizer.

FIGURE 3–3. DISPLAY WINDOW



The display window includes:

a. Exposure Time

b. Exposure Temperature (can display °F or °C); see “Selecting the Language, Date Format, and Units” on page B–46 to set the temperature mode

c. Drying Time (not used for liquids cycles)

d. Cycle information including:

- cycle selected—such as GRAVITY1 and LIQUIDS1
- phase name—such as HEAT-UP, EXPOSURE, DRYING, EXHAUST, and CYCLE COMPLETE
- time in the cycle—the cycle timer begins when the cycle starts and continues to increase until the cycle is complete

NOTE
When the phase is STANDBY, the cycle timer does not increase.

- time in current phase—the in-phase timer begins when each phase starts and resets at the end of each phase
- IN PROCESS—light blue background
- CYCLE COMPLETE—green background
- PROCESS FAILURE—flashing red background

e. Process screen includes:

- a user selectable process screen
  - bar graph; see Figure 3–4 on page 3–7
  - details; see Figure 3–5 on page 3–8
  - plot graph; see Figure 3–6 on page 3–8
- dialog boxes
- password window

NOTE
If all the items in the list do not fit on one screen, a black scroll bar displays to the right of the list. Use the up and down arrows to view additional items.

f. Critical alarms

- failure conditions
- fault conditions

g. Non-critical information and system messages (informational messages)

h. through l.—five softkey labels that display different function names depending on the current screen or cycle phase; see “Softkeys” on page 3–10

7. The printer provides a record of the cycle. See “Operating the Printer” on page 3–17.
8. The jacket pressure gauge indicates the current jacket pressure.
9. The chamber pressure gauge indicates the current chamber pressure.

CONTROL PANEL NAVIGATION

The 633HC Steam Sterilizer has an easy to use interface. This section covers:

- three process screens; see page 3–7
- softkeys label assignments; see page 3–10
- the backlight display and the sterilizer controls; see page 3–13
- basic navigation of the software; see page 3–13

PROCESS SCREENS

The user has the option of selecting one of three process screens:

- a screen with an enlarged timer (bar graph)
- a list of real-time, process-critical values including, but not limited to, chamber temperature, chamber pressure, jacket temperature, atmospheric pressure, exposure temperature maximum, exposure temperature minimum (details)
- a screen with a graphical display (plot graph)

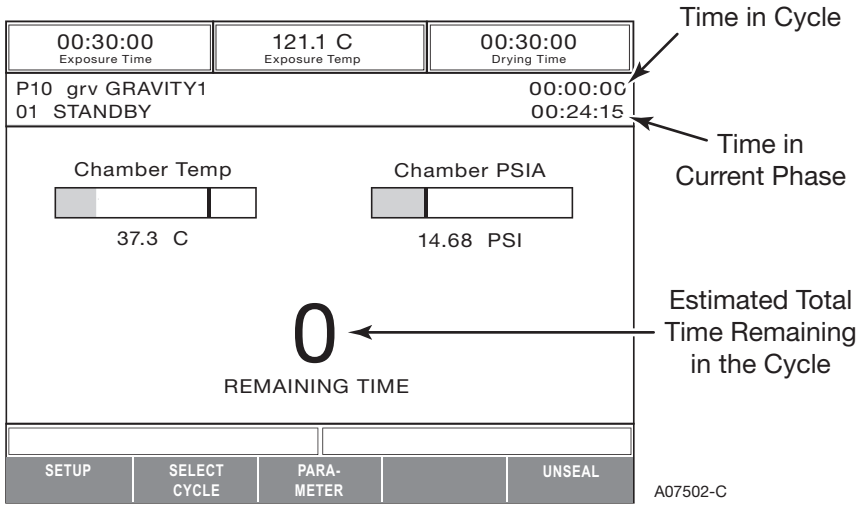
A password is not required to select a process screen.

BAR GRAPH SCREEN

The bar graph screen displays the chamber temperature and pressure as bar graphs and a digital time representing the time remaining in the cycle. Each bar graph includes a vertical red line to indicate the following information:

- On the chamber temperature bar graph, the red line marks the exposure temperature.
- On the chamber pressure bar graph, the red line marks atmospheric pressure.

FIGURE 3–4. BAR GRAPH SCREEN



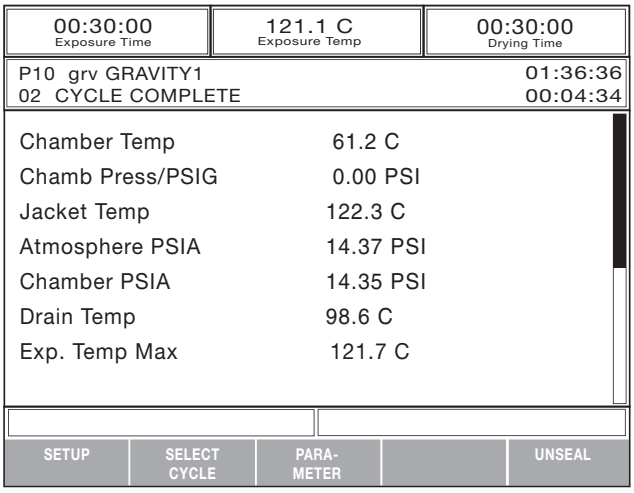
DETAILS SCREEN

The details screen displays a list of real-time, process-critical values, including: chamber temperature, chamber pressure, jacket temperature, atmospheric pressure, drain temperature, exposure temperature maximum, exposure temperature minimum, steam table differential, time at exposure temperature, cycle counter, daily counter, leak test start, leak test differential, and software version.

NOTE

If all the items in the list do not fit on one screen, a black scroll bar displays to the right of the list. Use the up and down arrows to view additional items.

FIGURE 3–5. DETAILS SCREEN



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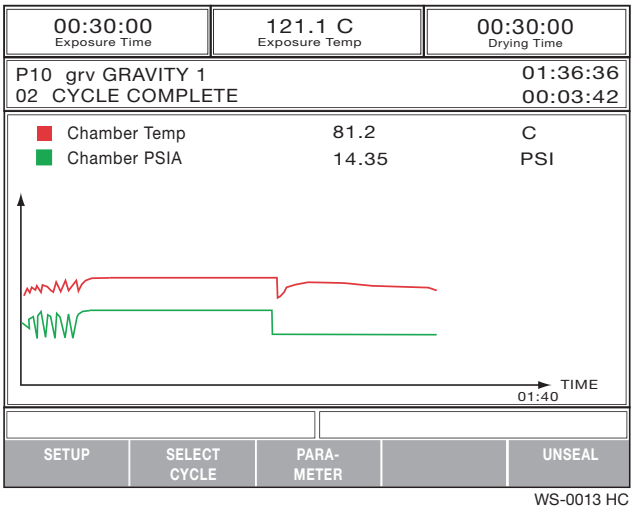
PLOT GRAPH SCREEN

Using a graphic display, the plot graph screen displays the chamber temperature and pressure as trend curves.

FIGURE 3–6. PLOT GRAPH SCREEN



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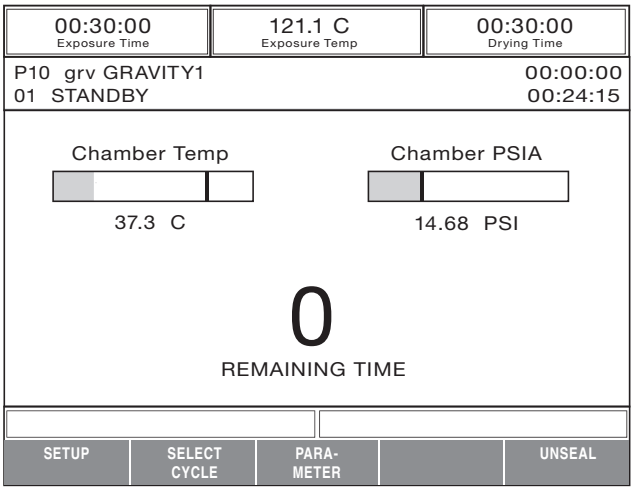
SELECTING A PROCESS SCREEN

The process screen displays when you turn ON the sterilizer control panel. See “Turning the Controls ON or OFF” on page 3–13.

FIGURE 3–7. PROCESS (BAR GRAPH) SCREEN



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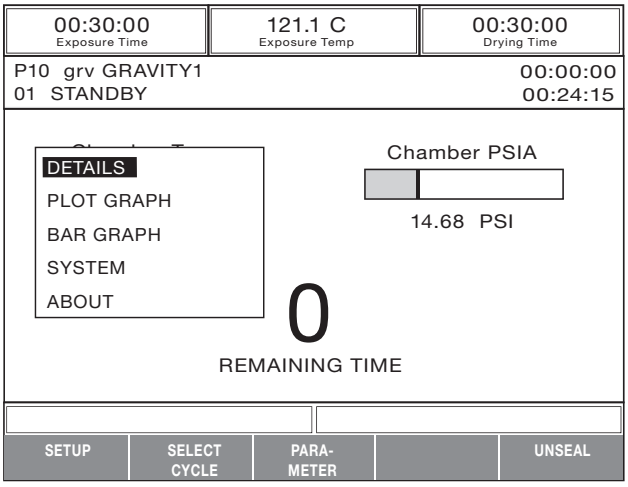
1. Press [SETUP].

   The setup menu displays.

FIGURE 3–8. SETUP MENU SCREEN



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2. Use the up and down arrows to select the process screen:
   - DETAILS
   - PLOT GRAPH
   - BAR GRAPH

3. Press ENTER.

   The selected process screen displays.

SOFTKEYS

Navigation of the software interface is controlled using the softkeys (↑) that appear at the bottom of each screen. The softkey labels, located directly above the softkeys, change depending on the current screen or the cycle phase. The following table shows the labels assigned to each softkey.

NOTE

Access levels assigned determine the screens that are viewed.

TABLE 3–3. SOFTKEY ASSIGNMENTS

Softkey Labels					Screen or Procedure
SETUP	SELECT CYCLE	PARA-METER		UNSEAL	Startup or Default screen
SETUP		PARA-METER		UNSEAL	Default screen CYCLE COMPLETE
SETUP		PARA-METER		MORE	Default screen in-cycle
ABORT	ADVANCE			EXIT	Default screen in-cycle (timed phase) (after MORE is pressed)
SETUP		PARA-METER		ABORT	Default screen in-cycle (untimed phase)
CANCEL					Setup menu
CANCEL				OK	SELECT CYCLE screen
CANCEL		MORE PARAMS		OK or SAVE	Quick Edit Parameters screen
CANCEL	HOME			OK	EDIT PARAMETERS screen [MORE PARAMS]
CANCEL		+/-			Edit Parameters dialog box
CANCEL			EDIT	OK	VIEW PARAMETERS screen
CANCEL		CAPS LOCK	DELETE	OK	ADD USER, ACCESS AREAS or MACHINE NAME screen
CANCEL			DELETE	OK	ENTER PASSWORD screen
CANCEL	HOME			OK or SAVE	ALARM CLOCK, LANGUAGE DATE UNITS, or PANEL SETUP screens
		YES	NO		Confirmation message box (if preference is enabled) See “Setting Up the Display Panel” on page B–49.
CANCEL	HOME				System Menu options
CANCEL	HOME	BRIGHT DEC	BRIGHT INC	OK	ABOUT screen
↑	↑	↑	↑	↑	
Softkeys					

DISABLING OR ENABLING THE CONTROLS

The key lockout feature should be used during maintenance and any time a person needs to enter the sterilizer chamber.

WARNING

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

To lockout (disable) the controls:

1. Turn the key located in the CONTROLS DISABLE/ENABLE switch to DISABLE.

   If the CONTROLS OFF/ON button is depressed:

   - The CONTROLS OFF/ON button darkens.
   - The backlight display turns OFF.
   - The controls turn OFF.

   Otherwise, the controls and the backlight display remain OFF.

2. Remove the key and keep it with you.

To enable the controls:

1. Insert the key into the CONTROLS DISABLE/ENABLE switch.
2. Turn the key to ENABLE.

   If the CONTROLS OFF/ON button is depressed:

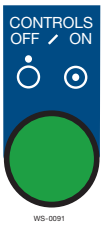
   - The CONTROLS OFF/ON button switch illuminates and remains depressed.
   - The backlight display illuminates.
   - The controls turn ON.

   Otherwise, the controls and the backlight display remain OFF.

NOTE

The key cannot be removed from the CONTROLS DISABLE/ENABLE switch unless set to DISABLE.

TURNING THE CONTROLS ON OR OFF



To turn the backlight display and the controls ON:

1. Check that the controls are enabled. If not, enable them; see “Disabling or Enabling the Controls” on page 3–12.
2. Press the CONTROLS OFF/ON button.
   - The switch illuminates and remains depressed.
   - The backlight display illuminates.
   - The controls turn ON.

NOTE

If the power is interrupted by pressing CONTROLS ON/OFF accidentally, turn the controls back ON. The cycle is not canceled if the controls are turned ON within 2 seconds.

If primary power is interrupted (e.g., a circuit breaker trips), the cycle is not canceled if power is restored within 59 seconds.

To turn the backlight display and the controls OFF:

1. Press the CONTROLS OFF/ON button.

NAVIGATION BASICS

DIRECTIONAL ARROWS

Each of the directional arrows has a specific function:

- up arrow (↑)
  - scrolls up a list on the current screen or window
  - when the cursor is activated (blinking cursor), increases the digit or value that is highlighted
- right arrow (→)
  - moves the cursor on the current screen or window right to highlight a field
- down arrow (↓)
  - scrolls down a list on the current screen or window
  - when the cursor is activated (blinking cursor), decreases the digit or value that is highlighted
- left arrow (←)
  - moves the cursor on the current screen or window left to highlight a field

ENTER

Use the ENTER switch to:

- accept numbers and letters when entering passwords, machine names, or changing a parameter setting
- select an item from a list (such as a cycle from the list of available cycles, a menu option, or a parameter)
- store a cycle selection in memory

SELECTING AN ITEM FROM A LIST

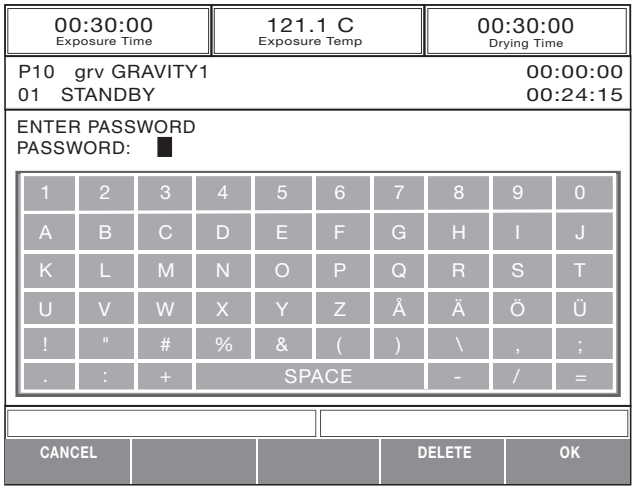
Selecting an item from a list is very simple. Use the up and down arrows to select the item and press ENTER to store the selection in memory.

For more detailed instructions, see “Previewing and Selecting a Cycle” on page 4–3.

ENTERING AN ALPHANUMERIC VALUE

When an alphanumeric value needs to be entered, a screen similar to Figure 3–9 on page 3–14 displays.

FIGURE 3–9. KEYBOARD SCREEN



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When the keyboard screen displays, the blinking cursor is positioned at the location of the first character of the string and the first key on the keyboard is highlighted. Use the directional arrows to navigate to the appropriate character; press ENTER to select the character. The selected character or # sign displays in the position of the blinking cursor and the blinking cursor moves to the right of the character. After entering the last character of the string, press [OK].

NOTE

The right/left directional arrows wrap, that is, pressing the right arrow when the last key in a row is highlighted selects the first key in the same row; and vice versa. The up/down directional arrows behave in a corresponding manner. You can use this feature to reduce the number of switch presses needed to enter the alphanumerica value.

Softkeys:

- [CANCEL] returns to the previous screen without accepting the alphanumeric value.
- [DELETE] deletes the character to the left of the cursor.
- [OK] accepts the alphanumeric value and, in the case of the password, displays the next screen if a valid password is entered.

For more detailed instructions, see:

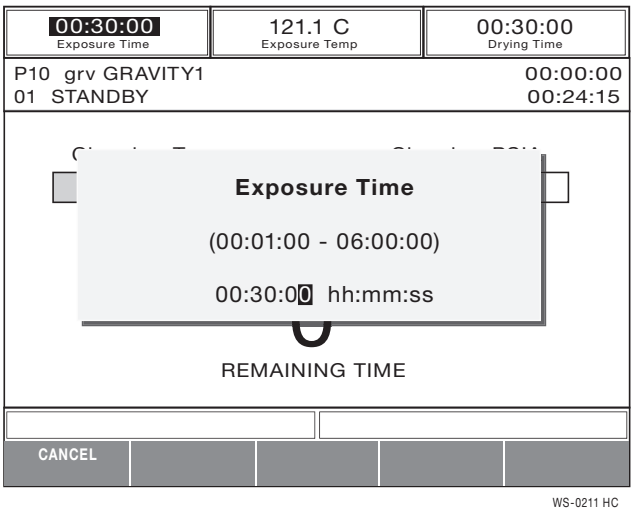
- “Entering a Password” on page B–2
- “Setting Up a User Account” on page B–10
- “Changing a User Password” on page B–17
- “Editing the Cycle Number” on page B–38
- “Editing the Cycle Name” on page B–39
- “Assigning the Sterilizer Name” on page B–44

ENTERING VALUES IN DIALOG BOXES

You change the values of cycle parameters by entering the new values in dialog boxes. When a dialog box displays over a process screen, the cursor is flashing, ready for you to enter the new value:

- Use the left and right arrows to select the field you want to change.
- Use the up and down arrows to enter the new value.
- Press ENTER to accept the changes, close the dialog box, and return the screen to save mode.

FIGURE 3–10. DIALOG BOX FOR VALUE ENTRY



After the dialog box closes, press [SAVE] to record the new value into memory and return the screen to read mode. For more detailed instructions, see “Editing Cycle Parameters” on page B–20.

NOTE

The dialog box displays the range of allowable values within parentheses. If you enter a value that is outside this range and press ENTER, the dialog box does not close but remains open for you to enter a value that is within the range.

RESPONDING TO YES/NO MESSAGE BOXES

Yes/No message boxes appear over process screens and are used to confirm changes made by the user (e.g., Confirm Save/Cancel). The user responds to the message box by pressing either the [YES] or [NO] softkey at the bottom of the process screen.

For more detailed instructions, see “Setting Up the Display Panel” on page B–49.

EXITING FROM A SCREEN

There are three commands used to exit from a screen:

- [CANCEL] returns to the previous screen without saving changes.
- [HOME] returns to the Process screen and logs out the current user.
- [OK] returns to the previous screen.

  In the case of the ENTER PASSWORD screen, pressing [OK] displays the screen that corresponds to the function selected (when a valid password is entered).

NOTE

If both [OK] and [CANCEL] softkeys display:

1. *Press [OK] to return to the previous screen.*
2. *When in edit mode (cursor blinking), press [CANCEL] to return to the previous screen without saving any changes.*

   When not in edit mode, press [CANCEL] to return to the previous screen.

If both [OK] and [CANCEL] (or [SAVE] and [CANCEL]) softkeys display, the CONFIRM CANCEL? YES OR NO prompt displays when [CANCEL] is pressed.

The CONFIRM CANCEL? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen. See “Setting Up the Display Panel” on page B–49.

OPERATING THE PRINTER

At the beginning of the cycle, the printer records the date and time the cycle was started, sterilizer name and ID number, cycle count, and cycle parameter settings.

During the cycle, the printer records the chamber temperature and chamber pressure at each transition point (start of a new phase), as well as the time of the transition. During exposure, the temperature and pressure are printed twice per minute. The program time is reset at the start of each cycle.

NOTE

The slow print interval (the time between data recordings) is factory set at 1 minute. The fast print interval (the time between recordings during exposure) is factory set at 30 seconds. The print intervals can be shortened (to record more data) or lengthened (to conserve paper) by qualified service personnel.

The temperature and pressure units (°C or °F; psi, kPa, or bar) can be configured by a user with Configuration password access. See "Selecting the Language, Date Format, and Units" in the Appendix "Supervisor Functions."

The column layout of the printout can be configured by qualified service personnel.

The printer also records any diagnostic messages that occur during the cycle, and the time they occurred.

NOTE

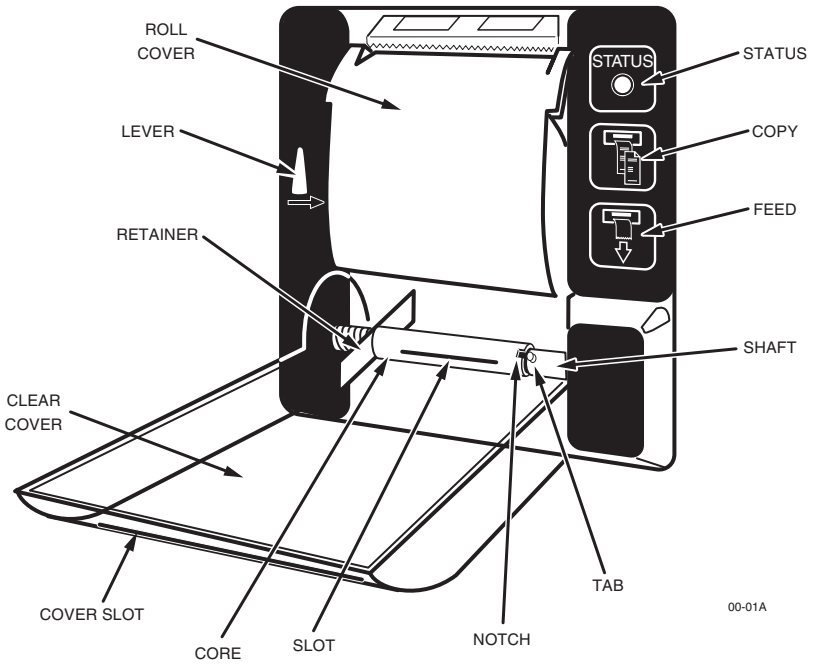
Occasionally with the initial introduction of AC power to the sterilizer, the message "LOW POWER BROWN OUT" may occur on the printout. This message is normal under power up conditions and no further action is required.

When removing the load from the sterilizer at the end of the cycle, be sure the printer's plastic cover is closed. This prevents residual steam from condensing on the printout or inside the cover.

If the printer's plastic cover is open and residual steam condenses on the printout, it causes darkening of the thermosensitive paper.

The printer has a paper take-up core which holds a complete roll of paper. If printouts of separate loads are required, this core can be removed. The printout remains behind the paper cover until the user opens the cover and tears off the printout.

FIGURE 3–11. PRINTER



STATUS INDICATOR

The STATUS indicator on the printer blinks when the printer is out of paper or there is a paper jam.

FIGURE 3–12. STATUS INDICATOR

●	OFF	= NO POWER
○	ON	= READY
☼	BLINKING	= PRINTER NOT READY, PAPER NOT PROPERLY INSERTED, OR ROLL COVER OPEN

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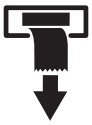
ADVANCING THE PAPER

To advance the paper through the printer, press and hold FEED.



To stop the paper advance, release FEED.

To take up slack paper without advancing more paper:

1. Press and release FEED. Then *immediately* press and hold FEED.

   The core takes up slack paper.

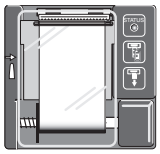
2. Release FEED.

USING THE LEVER

The lever helps remove the core. See Figure 3–11. To remove a full core, press the lever in the direction of the arrow. This opens the retainer.

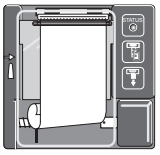
SAVING PRINTOUTS

There are three ways to save printouts:


00-01f

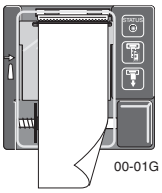
- full roll—to collect a complete roll on the core

  Insert the paper into the slot on the core, and remove the core when it is full. See “Replacing the Printer Paper” on page 3–19.


00-01H

- small sections—to collect printouts of shorter periods, such as daily use

  When loading paper, do not insert a new core. Instead, feed the paper to the area by the shaft. When information is printed, open the clear cover and tear off the printout.


00-01G

- separate printouts—to collect individual printouts for each cycle

  For separate small printouts, feed the paper out through the cover slot. During use, keep the clear cover closed. Before opening the sterilizer door, tear off the printout after each cycle.

TEARING OFF PRINTER PAPER

To tear off the printout for individual cycle records:

1. Press FEED for approximately one second.

   This advances the paper beyond the SIGNATURE line of the printout.

2. Open the printer cover.

3. Tear off the printout against the tear blade at the top of the printer.

4. Close the printer cover.

REPLACING THE PRINTER PAPER

To replace the printer paper roll (Figure 3–13 on page 3–20):

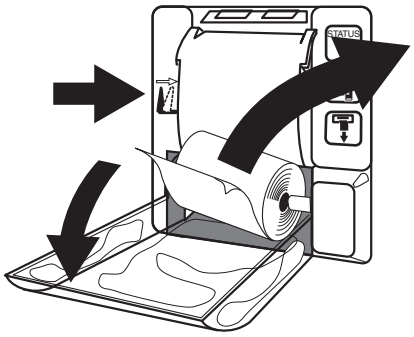
1. Remove the used take-up core. See “Removing the Used Take-up Core” on page 3–21.
2. Insert a new take-up core. See “Inserting a New Take-up Core” on page 3–21.
3. Insert a new roll. See “Inserting a New Roll” on page 3–21.
4. Load the paper. See “Loading the Paper” on page 3–21.

For small section or separate printouts, see “Saving Printouts” on page 3–19.

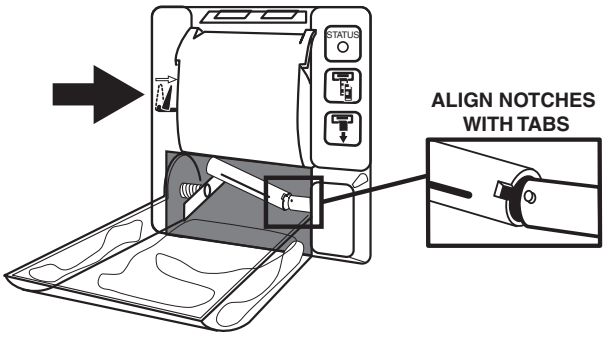
For information on ordering printer paper and cores, see Appendix A, “Consumable Stock and Spare Parts”.

FIGURE 3–13. REPLACING THE ROLL

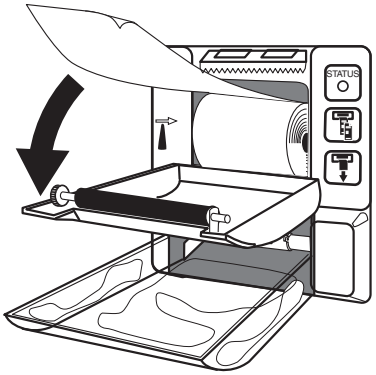
REMOVE THE USED TAKE-UP CORE



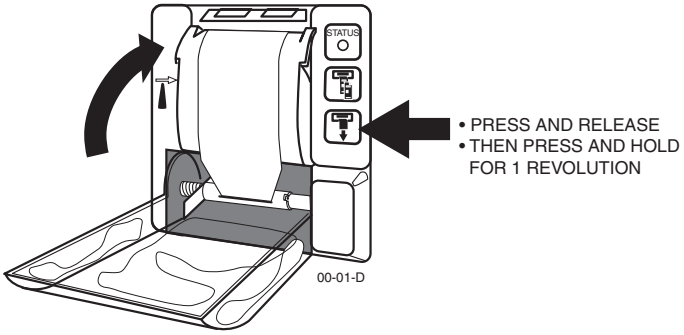
INSERT A NEW TAKE-UP CORE



INSERT A NEW ROLL



LOAD THE PAPER



REMOVING THE USED TAKE-UP CORE

The printer has a take-up core which holds a complete roll of paper. The printout remains behind the clear cover until the cover is opened and the printout is torn off or the paper roll removed.

1. Open the clear cover.

2. Press and hold the lever in the direction of the arrow.
3. Remove the used core.

NOTE

If printouts of separate loads are required, the take-up core can be removed.

INSERTING A NEW TAKE-UP CORE

1. Still holding the lever, align the notches on the new core with the tabs on the shaft. See Figure 3–13 on page 3–20.
2. Release the lever. Seat the new core against the retainer.

INSERTING A NEW ROLL

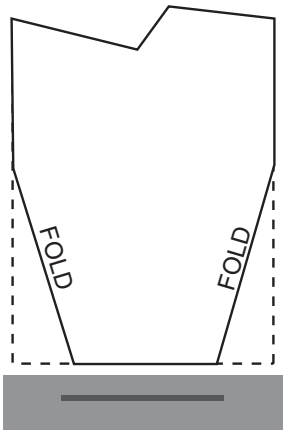
1. Open the roll cover.
2. Remove the old roll.
3. Insert the new roll as shown.
4. Pull out about 6 inches of paper.

   Be sure the plain side of the paper faces you.

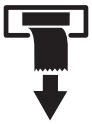
LOADING THE PAPER

1. Close the roll cover.
2. Fold the paper as shown in Figure 3–14 on page 3–22.

FIGURE 3–14. FOLD THE PAPER



3. Rotate the new core so the slot faces you.
4. Insert the paper into the slot.



5. Press and release FEED. Then *immediately* press and hold FEED.
   - The core turns.
   - Take up the paper at least one full revolution.
6. Release FEED. Close the clear cover.

STORING AND HANDLING PAPER ROLLS

NOTE

The printer uses a special heat-sensitive paper. The printer does not print on rolls of plain paper.

The paper should not be exposed to temperatures above 104°F (40°C) for extended periods of time. Exposure to direct sunlight for several weeks or longer may darken the paper, making the printout difficult to read.

Direct contact with steam discolors the paper, making the printout difficult to read. Always close the clear protective cover after replacing the paper roll or removing printouts from the take-up compartment.

PRINTING A DUPLICATE RECORD

To print a duplicate of the previous cycle record:

1. When the sterilizer is not running a cycle, press and release COPY.

   The duplicate record prints.

NOTE

COPY functions only from the end of a cycle until the start of the next cycle. Pressing CYCLE START clears the printer memory.

During a cycle, COPY is disabled.

READING THE CYCLE PRINTOUT

A sample cycle printout of a vacuum cycle run on a 633HC Steam Sterilizer is shown in Figure 3–15 on page 3–26. The proper interpretation of the information produced during a cycle is the subject of this section.

NOTE

When a printout of a cycle is produced, the cycle start is near the bottom of the printout and the end of the cycle is near the top. When reading the printout, always read from bottom to top.

The sample printout shown in Figure 3–15 is from a vacuum cycle. Different sterilization cycles produce printouts with slightly different information, but time stamps and pressure and temperature readings are all read in the same way.

There are 2 printer rates (fast log and slow log). The factory set parameters are:

- *Fast Log prints every 30 seconds during the exposure phase.*
- *Slow Log prints every 60 seconds during phases other than exposure.*

Slow and Fast Log intervals may be adjusted by qualified service personnel.

All times are elapsed time (the amount of time that has elapsed since the start of the cycle) except for PROCESS START and PROCESS END.

CYCLE START AND PARAMETERS

Callout 1 shows a line of text that indicates that a new cycle has started (DATE:).

The information between Callout 1 and Callout 3 lists some of the parameters for the cycle. As an example, Callout 2 shows the EXPOSURE TIME for the current cycle (00:03:00). The EXPOSURE TIME is the amount of time the EXPOSURE TEMP is maintained.

Callout 3 shows the name of the current cycle. In this example, the cycle is a vacuum cycle named P1 vac PREVAC1.

PHASES

Each time a phase within a cycle starts, the phase name is recorded on the printout. In the sample printout, Callout 4 shows the beginning of the EXPOSURE phase.

Immediately above the word EXPOSURE, the printout displays the time stamp for the start of the phase, along with the chamber pressure and temperature. In this example, the printout shows the EXPOSURE phase started at 00:07:46 into the cycle, and, at that time, the chamber pressure was 45.86 psia and the chamber temperature was 135.5°C.

During timed phases, the printer reports the appropriate cycle information including chamber pressure, and chamber temperature readings at regular intervals. EXPOSURE uses the fast log rate, factory set at 30 seconds. Therefore, after the start of EXPOSURE at 00:07:46, there are readings at 00:08:17, 00:08:47, and so forth. The sample printout is truncated to fit on the page; a complete printout displays the pressure and temperature readings every 30 seconds for the entire 3 minute phase.

When the cycle changes from one phase to the next, the new phase name is printed along with the time stamp at which the phase begins, as well as the chamber pressure and temperature readings. In this example, Callout 5 shows the EXHAUST phase starting at 00:10:47 into the cycle. The beginning of the new phase (EXHAUST) also marks the end of the previous phase (EXPOSURE).

NOTE
Phases do NOT overlap.

Different cycles feature different phases and parameters.

Unlike the EXPOSURE phase where readings are printed at the fast log rate, the EXHAUST phase readings are reported at the slow log rate.

VALIDATING THE EXPOSURE PHASE

The following paragraphs use the cycle parameters and results to validate the EXPOSURE phase.

The start time stamp of each phase within a cycle is printed. Therefore, it is possible to determine the total time of any given phase. In Figure 3–15, Callout 4 shows the EXPOSURE phase starting at 00:07:46 into the cycle and Callout 5 shows the EXHAUST phase starting at 00:10:47 into the cycle. The total exposure time is the difference between the two start times, or 00:03:01. This is validated by the EXPOSURE TIME parameter in Callout 2, which reads 00:03:00.

Examining the EXPOSURE TEMP parameter appearing above Callout 2 reveals the P1 vac PREVAC1 cycle requires an exposure temperature of 135.0°C. During the EXPOSURE phase the temperatures recorded are between 135.4°C and 135.5°C, which are within acceptable sterilization variances.

This information shows the EXPOSURE phase is valid because 135.0°C was achieved and maintained for a time of at least 00:03:00.

CYCLE END

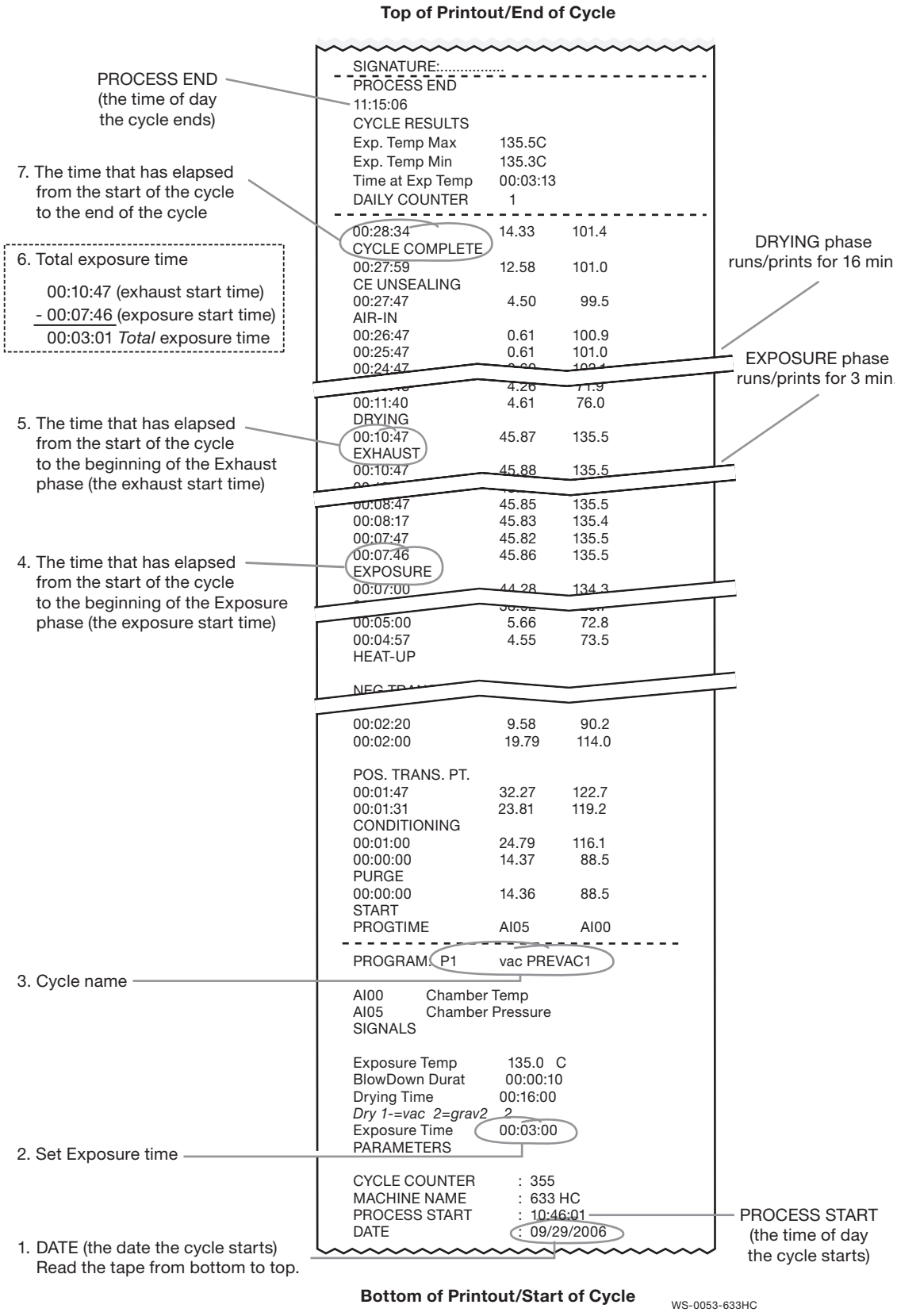
Callout 7 shows a line that reads CYCLE COMPLETE followed by a line with a time stamp, chamber pressure, and chamber temperature readings. This is the end of the P1 vac PREVAC1 cycle.

CYCLE RESULTS

Pertinent information regarding the cycle is displayed together for ease of use. The information includes:

- the number of cycles completed; this counter resets everyday at midnight (DAILY COUNTER)
- the amount of time the sterilizer was at the exposure temperature (TIME AT EXP TEMP)
- the minimum (EXP TEMP MIN) and maximum (EXP TEMP MAX) exposure temperature that occurred during the cycle

FIGURE 3–15. SAMPLE PRINTOUT OF A STERILIZER CYCLE


Top of Printout/End of Cycle
PROCESS END (the time of day the cycle ends)
7. The time that has elapsed from the start of the cycle to the end of the cycle
6. Total exposure time
00:10:47 (exhaust start time)
- 00:07:46 (exposure start time)
00:03:01 Total exposure time
5. The time that has elapsed from the start of the cycle to the beginning of the Exhaust phase (the exhaust start time)
4. The time that has elapsed from the start of the cycle to the beginning of the Exposure phase (the exposure start time)
3. Cycle name
2. Set Exposure time
1. DATE (the date the cycle starts) Read the tape from bottom to top.
DRYING phase runs/prints for 16 min
EXPOSURE phase runs/prints for 3 min
PROCESS START (the time of day the cycle starts)
SIGNATURE:.....
PROCESS END
11:15:06
CYCLE RESULTS
Exp. Temp Max 135.5C
Exp. Temp Min 135.3C
Time at Exp Temp 00:03:13
DAILY COUNTER 1
00:28:34 14.33 101.4
CYCLE COMPLETE
00:27:59 12.58 101.0
CE UNSEALING
00:27:47 4.50 99.5
AIR-IN
00:26:47 0.61 100.9
00:25:47 0.61 101.0
00:11:40 4.61 76.0
DRYING
00:10:47 45.87 135.5
EXHAUST
00:10:47 45.88 135.5
00:08:47 45.85 135.5
00:08:17 45.83 135.4
00:07:47 45.82 135.5
00:07:46 45.86 135.5
EXPOSURE
00:05:00 5.66 72.8
00:04:57 4.55 73.5
HEAT-UP
00:02:20 9.58 90.2
00:02:00 19.79 114.0
POS. TRANS. PT.
00:01:47 32.27 122.7
00:01:31 23.81 119.2
CONDITIONING
00:01:00 24.79 116.1
00:00:00 14.37 88.5
PURGE
00:00:00 14.36 88.5
START
PROGTIME AI05 AI00
PROGRAM: P1 vac PREVAC1
AI00 Chamber Temp
AI05 Chamber Pressure
SIGNALS
Exposure Temp 135.0 C
BlowDown Durat 00:00:10
Drying Time 00:16:00
Dry 1-=vac 2=grav2 2
Exposure Time 00:03:00
PARAMETERS
CYCLE COUNTER : 355
MACHINE NAME : 633 HC
PROCESS START : 10:46:01
DATE : 09/29/2006
Bottom of Printout/Start of Cycle
WS-0053-633HC

SECTION 4 OPERATION

SEQUENCE OF OPERATION

This section covers the sequence a user may follow when sterilizing a load:

Procedure	Page
Start of Day Checklist	4–2
Turning the Controls ON	4–2
Previewing and Selecting a Cycle	4–3
Opening and Closing the Sterilizer Door	4–7
Load Preparation	4–9
Techniques for Loading	4–11
Loading Accessories	4–14
Loading the Sterilizer	4–22
Processing a Cycle	4–23
End of Cycle Routine	4–25
Unloading the Sterilizer	4–27
End of Day Checklist	4–29

This section also covers routine procedures including:

Canceling a Cycle (Manual Abort)	4–30
Advancing a Cycle	4–33
Shutting Down the Sterilizer	4–36
Recovering from Electrical Power Failure	4–38
Opening the Door Manually	4–40
Performance Testing	4–53

OPERATING THE STERILIZER

START OF DAY CHECKLIST

WARNING

HOT SURFACES: The chamber and the gasket area could be HOT. Turn OFF the controls and make sure the sterilizer is cool before cleaning the gasket or removing the sediment screen for cleaning.

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

Before operating the sterilizer each day:

1. Check the printer paper roll and replace it if necessary. See “Replacing the Printer Paper” on page 3–19.
2. Inspect and clean the sediment screen in the chamber drain. See “Cleaning the Sediment Screen” on page 7–2.
3. Clean the bleed drain guards. See “Cleaning the Bleed Drain Guards” on page 7–3.

TURNING THE CONTROLS ON

For information regarding the controls, see “Turning the Controls ON or OFF” on page 3–13.

OPERATIONAL READINESS

NOTE

If the sterilizer is equipped with a steam boiler, allow the boiler to warm up for 20 to 30 minutes before running a cycle.

To ensure that the sterilizer is ready for processing without requiring a warm-up period:

- Leave the sterilizer ON during regular periods of sterilizer inactivity.
- Close but do not seal the sterilizer door(s).

Conduct an air removal performance test (Bowie and Dick Test) if the daily schedule includes a prevacuum wrapped goods cycle. See “Bowie and Dick Test” on page 4–53.

PREVIEWING AND SELECTING A CYCLE

When making a cycle selection, pressing ENTER displays the exposure time, exposure temperature, drying time, and the name of the selected cycle at the top of the SELECT CYCLE screen. See Figure 4–2 on page 4–4. This feature permits the preview of several different cycle settings before final selection.

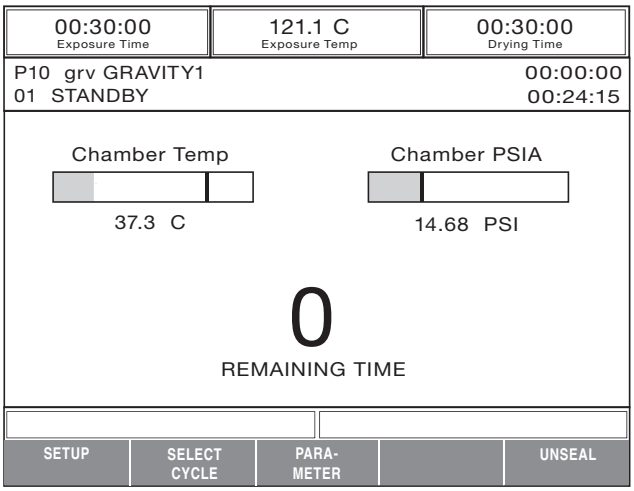
After previewing the cycle, press [OK] to select the cycle.

NOTE

The information that appears in the Process screen depends on the type currently selected (Details, Plot Graph, or Bar Graph).

Press [CANCEL] at any time to return to the Process screen without selecting a cycle.

FIGURE 4–1. PROCESS SCREEN (BAR GRAPH)



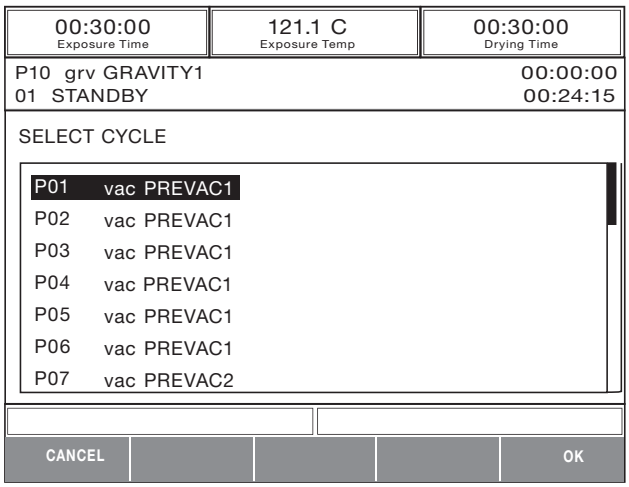
WS-0014 HC

To select a cycle:

1. From the Process screen, press [SELECT CYCLE].

   The SELECT CYCLE screen appears.

FIGURE 4–2. SELECT CYCLE SCREEN



WS-0446 HC

2. Use the up and down arrows to scroll the list of cycles.

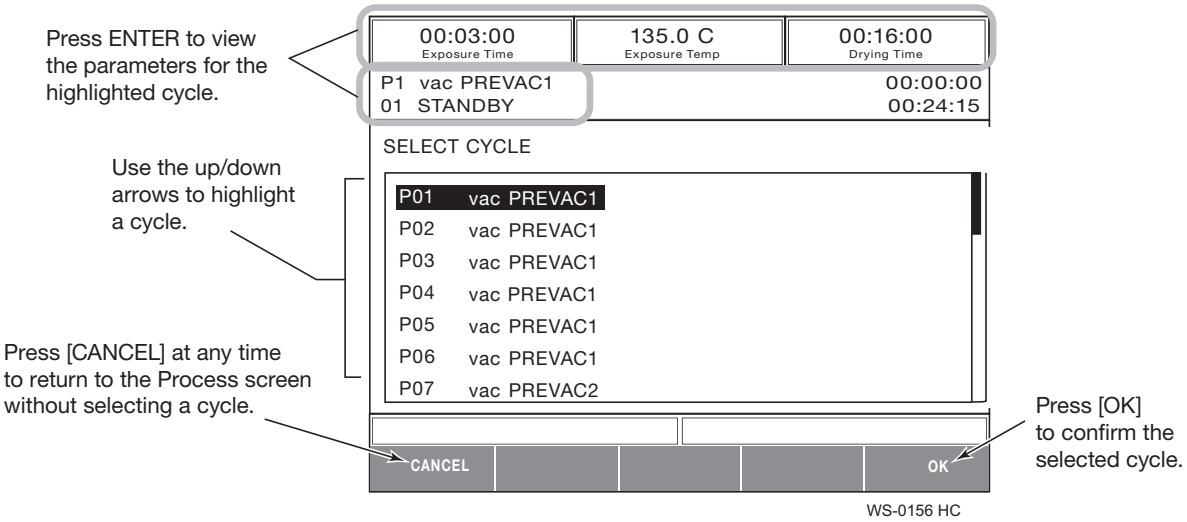
   The black scroll bar at the right side of the screen indicates more cycles exist than can fit on one screen. Continued scrolling refreshes the screen and displays any additional cycles.

   Stop scrolling when the desired cycle is highlighted.

3. Press ENTER to preview the cycle parameters.

   The cycle name and cycle parameters appear at the top of the display.

FIGURE 4–3. SELECTING A CYCLE



WS-0156 HC

4. Verify the cycle parameters are correct for the load.
   - If correct, press [OK] to confirm the cycle.
   - If not correct, repeat step 2 and step 3 until the correct cycle is selected.

NOTE

Press [CANCEL] at any time to return to the Process screen without selecting a cycle.

The Process screen displays.

NOTE

If a cycle is highlighted without pressing ENTER, pressing [OK] confirms the last cycle entered instead of the cycle currently highlighted.

OPERATING THE STERILIZER DOOR

WARNING

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

BURN/PINCH HAZARD: KEEP HANDS AND FINGERS AWAY FROM A MOVING DOOR. To stop the door direction if your hands or fingers are caught in the door accidently:

If the door is closing	Press one of the following: • [OPEN DOOR] • [CANCEL] • CONTROLS OFF/ON
If the door is opening	Press one of the following: • [CLOSE DOOR] • [CANCEL] • CONTROLS OFF/ON

BURN HAZARD: The door and chamber area could be HOT enough to cause burns. Wear personal protective equipment (PPE) when loading and unloading the chamber.

BURN HAZARD: Before removing a load from the chamber, unseal the door and wait about a minute for the steam to vent before opening the door. Stand back to avoid possible burns when lowering the door.

POSSIBILITY OF INJURY: Do not operate the door while loading or unloading the sterilizer.

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

WARNING

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Use of sealed, unvented containers to process liquids can result in permanent damage to the sterilizer.

SAFETY FEATURES

These safety features apply to all units under normal conditions:

- The user cannot close the chamber door when CONTROLS DISABLE/ENABLE is set to DISABLE.
- The user cannot unseal a door while a cycle is processing.
- If a door is not fully closed, the user cannot seal it.
- If a door does not seal, the cycle does not start.
- If there is pressure or vacuum in the chamber at the end of the cycle, the user cannot unseal the door.

OPENING AND CLOSING THE STERILIZER DOOR

A motor raises and lowers the door, but does not seal the door. The door is sealed when START is pressed.

NOTE

The door can also be sealed by pressing CLOSE DOOR again when the door is already closed.

WARNING

BURN/PINCH HAZARD: KEEP HANDS AND FINGERS AWAY FROM A MOVING DOOR. To stop the door direction if your hands or fingers are caught in the door accidently:

If the door is closing	Press one of the following: • [OPEN DOOR] • [CANCEL] • CONTROLS OFF/ON
If the door is opening	Press one of the following: • [CLOSE DOOR] • [CANCEL] • CONTROLS OFF/ON

NOTE

Wait for approximately 1 minute for the steam to vent before opening the door.

To open the door:

1. Press OPEN DOOR once.

   Stand away from the door area while the door is in motion.

To close the door:

1. Press CLOSE DOOR once.

   Stand away from the door area while the door is in motion.

When the door is closed and START is pressed, the door seals automatically and the selected cycle begins. When a cycle is complete, the door unseals automatically, but remains closed until OPEN DOOR is pressed.

LOAD PREPARATION

WARNING

RISK OF INFECTION: Airborne microbial and particulate contamination is likely to be high in the decontamination area of the sterile processing department. Wear appropriate personal protective equipment (PPE) when preparing items for cleaning.

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

POSSIBILITY OF INJURY: The liquids cycle is NOT intended for the sterilization of liquids intended for direct patient contact.

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Use of sealed unvented containers to process liquids can result in permanent damage to the sterilizer.

NOTE

RIGID CONTAINER SYSTEM USERS: Contact the Rigid Container System Manufacturer to determine validated cycle parameters and proper loading of contents into the containers. It may be necessary to adjust factory settings of the sterilizer to match the manufacturer's parameters for the container.

The 633HC Steam Sterilizer is designed to steam-sterilize hospital goods and solutions. Typical load types include:

- non-porous hard goods, including instruments, basins, cups, tools, test tubes, and glassware
- wrapped/unwrapped porous goods, including cloth, towels, gowns, and sheets
- wrapped porous goods, including instruments, basins, and tools
- non-flammable/non-volatile liquids in self-venting or open containers

  The liquids cycle is not intended for sterilization of liquids intended for patient contact.

Clean, package, and load items according to established procedures for your workplace. Refer to *AAMI Standard ST79: Comprehensive guide to steam sterilization and sterility assurance in health care facilities*.

CREUTZFELDT-JAKOB DISEASE (CJD) DECONTAMINATION

It is the responsibility of the facility to establish internal policies and procedures relative to processing instruments that have or may have been exposed to CJD. If instruments exposed to CJD are processed in accordance with the *World Health Organization (WHO) Infection Control Guidelines for Transmissible Spongiform Encephalopathies (TSE)*, there are:

WARNING

POTENTIAL HAZARDS TO USERS AND REPAIR PERSONNEL:

- *Be sure to wear personal protective equipment (PPE) when handling NaOH liquids.*
- *Heated NaOH liquids have the potential to injure personnel who handle the containers.*
- *Heated NaOH liquids can emit fumes that can be corrosive to eye tissue and can cause respiratory distress.*
- *Cleaning residual NaOH from the chamber interior could lead to skin burns and the production of NaOH aerosol mist.*

CAUTION

POTENTIAL DAMAGE TO THE STERILIZER:

- *Processing caustic chemicals inside sterilizers is not recommended.*
- *NaOH is corrosive to copper and brass and has the potential to damage the chamber and lower piping.*

TECHNIQUES FOR LOADING

WARNING

RISK OF NON-STERILE DEVICE: The recommended minimum exposure time and temperature for unwrapped non-porous flash cycle loads (e.g., metal instruments) is 3 minutes at 275°F (135°C).

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Use of sealed unvented containers to process liquids can result in permanent damage to the sterilizer.

The following recommendations apply both to the loading car and transfer carriage (see Figure 4–4 on page 4–15) and to the rack and extendable shelves (see Figure 4–10 on page 4–20):

- All packages must be positioned in the chamber to allow free circulation and penetration of steam, enhance air elimination, and prevent entrapment of air or water.
- Do not overload the loading car or shelves. When placing items on the car or shelves, be sure there is enough space for free circulation of steam around each pack and each item. This also ensures adequate air elimination, steam penetration, and drainage of condensate, which are all needed to attain product sterility.
- Items capable of holding water, such as basins and trays, should be oriented in the same direction and arranged so that any condensate drains out. Wicking material such as absorbent towels should be used to absorb condensate.
- Large or heavy metal items should be placed on the lowest shelf to enable the condensate to drain out without wetting other items in the load.
- When using non-woven wrap, ensure there are no low spots that might hold condensation.
- When processing liquids in open containers, fill the containers to only 75% of capacity (e.g., 750 mL for a 1 liter container). This limits the liquid loss to < 6% of the volume.
- Heat penetration of liquid solutions is affected by both liquid volume and container geometry. To ensure effective sterilization processing, liquid loads should be of a uniform volume and container size.

TABLE 4–1. 633HC STEAM STERILIZER LOAD CHART

Cycle Type	No. of Available Cycles	Factory Settings			Load Configuration[2]	Maximum Items per Chamber Length		
		Exp. Temp.	Exp. Time	Dry Time[1]		26 in. (0.660 m)	39 in. (1.0 m)	51 in. (1.3 m)
vac PREVAC 1	6	275°F (135°C)	3 min	16 min	Double-wrapped instrument trays, up to 16 lbs (per tray)	4	8	12
					Fabric packs	8	18	24
vac PREVAC 2	2	275°F (135°C)	3 min	3 min	Fabric packs	8	18	24
vac B & D TEST	1	273°F (134°C)	3 min, 30 sec	0 min	S.M.A.R.T. Pack or equivalent (1 max.) in an EMPTY chamber	1 Test Pack	1 Test Pack	1 Test Pack
grv GRAVITY 1	3	250°F (121°C)	30 min	30 min	Double-wrapped instrument trays, up to 16 lbs (per tray)	4	8	12
					Fabric packs	8	18	24
grv GRAVITY 2	3	275°F (135°C)	10 min	30 min	Double-wrapped instrument trays, up to 16 lbs (per tray)	4	8	12
					Fabric packs	8	18	24
f3 FLASH 3+	2	275°F (135°C)	3 min	30 sec[5]	Unwrapped, non-porous single instrument	1	1	1
					Unwrapped, non-porous instrument trays, up to 16 lbs (per tray)	2	2	2
f10 FLASH 10+	2	275°F (135°C)	10 min	30 sec[6]	Unwrapped, porous or non-porous single instrument	1	1	1
					Unwrapped, porous and non-porous instrument trays, up to 16 lbs (per tray)	2	2	2
liq LIQUIDS	1	250°F (121°C)	45 min	0.75 psi/min[4]	Each container 1000 mL or smaller[5]	60	80	100
lk[3] LEAK TEST	1	268°F (131°C)	3 min	15 min dry, 5 min dwell, 15 min test	Empty chamber	—	—	—

TABLE NOTES

Load configurations follow *AAMI Standard ST8: Hospital steam sterilizers* where applicable.

[1]Factory set drying time is the recommended minimum drying time. Extended drying time may be required depending on local conditions. Gravity cycle drying time may be reduced by selecting vacuum drying phase.

[2]Refer to *AAMI Standard ST79: Comprehensive guide to steam sterilization and sterility assurance in health care facilities*.

[3]Vacuum leak test cycle parameters are not adjustable.

[4]Cooldown rate

[5]Your facility must validate the cycle if the load includes containers larger than 1000 mL.

[6]Items may NOT be dry. Dry time may be added if required.

FLASH STERILIZATION

WARNING

RISK OF NON-STERILE DEVICE: The recommended minimum exposure time and temperature for unwrapped non-porous flash cycle loads (e.g., metal instruments) is 3 minutes at 275°F (135°C).

BURN HAZARD: Flash sterilized unwrapped instruments could still be hot at the end of the cycle. These instruments could burn the patient if used immediately in surgical procedures. Use personal protective equipment when removing these items from the sterilizer and allow sufficient time for them to cool before using them in surgical procedures.

Review the contents of *AAMI Standard ST79: Comprehensive guide to steam sterilization and sterility assurance in health care facilities* and/or *CDC Guideline for Handwashing and Hospital Environmental Control* to create health care facilities policies and procedures for flash sterilization and sterilization of implantable devices.

AAMI Standard ST79: Comprehensive guide to steam sterilization and sterility assurance in health care facilities is available on the Internet at www.aami.org.

Center for Disease Control (CDC) Guideline for Handwashing and Hospital Environmental Control is available on the Internet at www.cdc.gov.

LOADING ACCESSORIES

The following loading accessories are available for these specific models:

Model	Accessories
26 in. (660 mm) chamber	Rack and 2 shelves
39 in. (1000 mm) chamber	Rack and 2 shelves or Loading car and transfer carriage
51 in. (1300 mm) chamber	Loading car and transfer carriage

NOTE

Units equipped for racks and shelves do not accept a loading car and transfer carriage.

OPERATING THE LOADING CAR AND THE TRANSFER CARRIAGE

WARNING

HOT SURFACES: The loading car may be hot enough to cause burns. Wear protective gloves and eyewear when loading and unloading the chamber.

POSSIBILITY OF INJURY: The loading car can hold a total maximum load of 440 lb. The shelves on the car are able to hold a maximum of 275 lb evenly distributed on each shelf, but the total weight of 440 lb on the car must not be exceeded. To avoid injury or equipment damage, do not exceed these weight limits.

POSSIBILITY OF INJURY: Before transporting liquid loads, make sure the side rails are installed on the loading cart. If the side rails are not installed, the liquid containers could fall off the loading cart and spill or break.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Do not place items on the floor of the chamber; this can block the drain and result in non-sterile or damaged loads. Always use the loading car or shelf.

FIGURE 4–4. LOADING CAR AND TRANSFER CARRIAGE

To transfer the loading car to the chamber:

1. Align the loading car and transfer carriage directly in front of the open chamber.

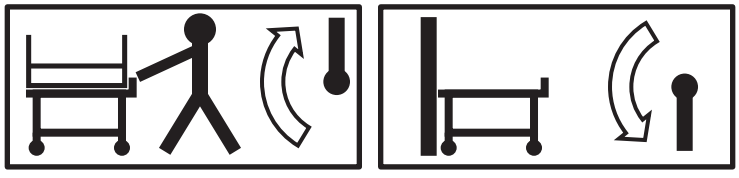
2. Move the transfer carriage forward until it stops against the rail.

FIGURE 4–5. LOCKING THE TRANSFER CARRIAGE

NOTE

An instruction label showing the correct locked and unlocked positions of the locking handle is located on the transfer carriage. See Figure 4–5 and Figure 4–6.

FIGURE 4–6. LOCKING HANDLE INSTRUCTION LABEL



3. Turn the locking handle counterclockwise to lock the transfer carriage to the sterilizer rail. See Figure 4–5.

4. Pull the transfer carriage to check that it is locked securely. If it is locked correctly, it cannot be pulled away from the sterilizer.

FIGURE 4–7. PUSHING THE LOADING CAR INTO THE STERILIZER

5. Push the loading car onto the rail in the sterilizer until it does not go any farther.

FIGURE 4–8. PULLING THE TRANSFER CARRIAGE AWAY FROM THE STERILIZER

6. Release the transfer carriage from the rail by turning the locking handle clockwise.

7. Pull the carriage away from the sterilizer.

REMOVING A LOADING CAR FROM THE CHAMBER

WARNING

HOT SURFACES: The loading car may be hot enough to cause burns. Wear protective gloves and eyewear when loading and unloading the chamber.

BURN HAZARD: Flash sterilized unwrapped instruments could still be hot at the end of the cycle. These instruments could burn the patient if used immediately in surgical procedures. Use personal protective equipment when removing these items from the sterilizer and allow sufficient time for them to cool before using them in surgical procedures.

To remove the loading car from the chamber:

1. Align the transfer carriage directly in front of the open chamber and lock the carriage with the locking handle. See Figure 4–7 on page 4–17.

2. Pull the transfer carriage to check that it is locked securely. If it is locked correctly, it cannot be pulled away from the sterilizer.

3. Pull the loading car out of the sterilizer until it stops at the end of the transfer carriage.

FIGURE 4–9. UNLOCKING THE TRANSFER CARRIAGE

4. Turn the locking handle clockwise. This secures the loading car to the transfer carriage at the same time the carriage is unlocked from the sterilizer.

5. Check that the loading car is secured correctly by pushing it toward the sterilizer. The loading car cannot be moved if it is secured correctly.

6. Pull the transfer carriage away from the sterilizer.

RACK AND EXTENDABLE SHELVES

The rack and extendable shelves are constructed of 300 series stainless steel. The shelves are removable to facilitate cleaning. The rack can hold up to four shelves. Two shelves are supplied; additional shelves may be purchased as an option.

WARNING

HOT SURFACES: The rack and shelves may be hot enough to cause burns. Wear protective gloves when loading and unloading the chamber.

POSSIBILITY OF INJURY: Observe the following loading recommendations:

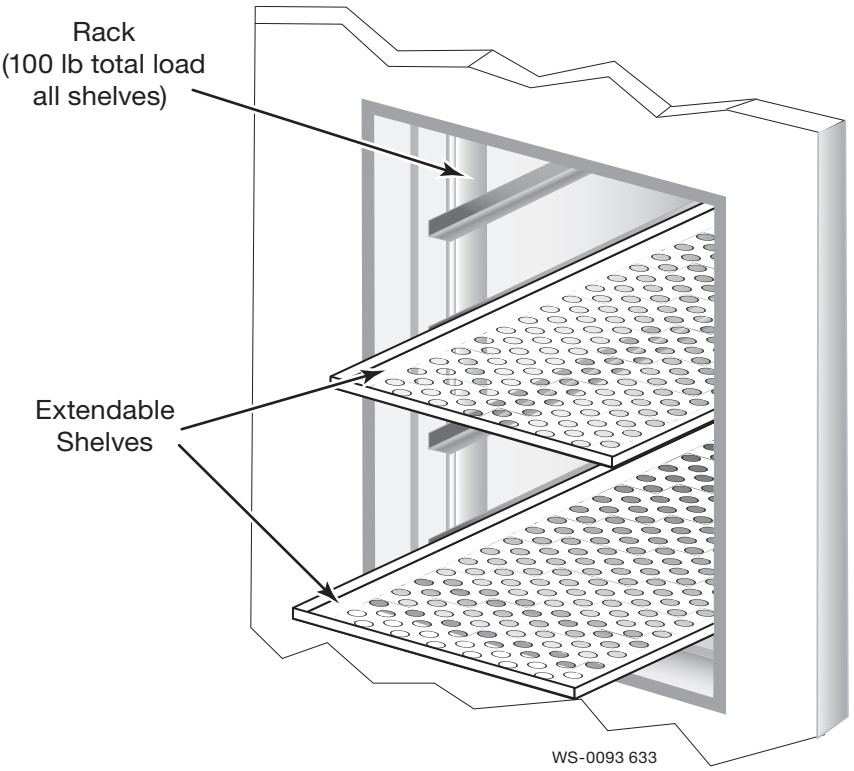
- *The rack can support a maximum load of 100 lb. An individual shelf can hold up to 50 lb, evenly distributed. Up to 4 shelves can be placed on the rack as long as the total maximum weight of 100 lb is not exceeded.*
- *Do not place more than 20 lb on the end of an extended shelf.*
- *Liquid loads (hot or cold) should never be placed on an extended shelf.*
- *Do not extend a shelf with liquid loads (hot or cold).*

BURN HAZARD: Flash sterilized unwrapped instruments could still be hot at the end of the cycle. These instruments could burn the patient if used immediately in surgical procedures. Use personal protective equipment when removing these items from the sterilizer and allow sufficient time for them to cool before using them in surgical procedures.

DO NOT EXCEED 20 POUNDS ON EXTENDED SHELVES

DO NOT EXTEND SHELVES CONTAINING BOTTLES

FIGURE 4–10. RACK AND EXTENDABLE SHELVES



CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Do not place items on the floor of the chamber; this can block the drain and result in non-sterile or damaged loads. Always use the loading car or shelf.

NOTE

Routine cleaning prolongs the useful life of the shelves, because chlorides from the steam or spillage from liquid loads may otherwise corrode 300 series stainless steel. See “Cleaning the Chamber Interior” on page 7–4.

For information on positioning the shelves, see “Installing a Shelf” on page 7–8 and “Removing a Shelf” on page 7–9.

LOADING THE STERILIZER

WARNING

BURN HAZARD: The door and chamber area could be HOT enough to cause burns. Wear personal protective equipment (PPE) when loading and unloading the chamber.

POSSIBILITY OF INJURY: Do not operate the door while loading or unloading the sterilizer.

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

POSSIBILITY OF INJURY: Wear protective eyewear, clothing, and gloves when handling liquids in containers.

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Use of sealed, unvented containers to process liquids can be result in permanent damage to the sterilizer.

To load the sterilizer:

1. Open the door if necessary. See “Operating the Sterilizer Door” on page 4–6.

2. Place the load into the chamber. See “Operating the Loading Car and the Transfer Carriage” on page 4–14 or “Rack and Extendable Shelves” on page 4–20.

NOTE

Always place the load on a shelf or rack. Do not place the load on the floor of the chamber.

3. Close the door. See “Opening and Closing the Sterilizer Door” on page 4–7.

PROCESSING A CYCLE

WARNING

RISK OF NON-STERILE DEVICE AND POSSIBILITY OF INJURY: Before pressing START, verify that the appropriate cycle is selected for the load being processed.

POSSIBILITY OF INJURY: If the wrong cycle is selected for a liquid load, the containers may burst or crack during processing.

RISK OF NON-STERILE DEVICE: If the wrong cycle is selected, the desired sterility assurance level (SAL) may not be reached.

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Use of sealed, unvented containers to process liquids can be result in permanent damage to the sterilizer.

NOTE

If the control panel shows UTILITY SHUTDOWN, see “Bypassing Utility Shutdown Mode” on page B–38.

To begin the sterilization cycle:

1. After the sterilizer is loaded, close the door.
2. Check that the START button LED is flashing. This indicates it is OK to start the sterilizer.
3. Verify that the correct cycle for the load type is selected.

4. After the load is placed within the sterilizer chamber, edit the cycle parameters as necessary. A password is required to edit cycle parameters.

NOTE
For information regarding editing a cycle parameter, see "Editing Cycle Parameters" on page B–20.

5. Press START.

a. The door(s) seal automatically (if not previously sealed) and the DOOR(S) SEALED LED illuminates.

b. During the cycle, the IN PROCESS LED illuminates and the chamber temperature and the elapsed time in each phase display on the screen.

6. At the end of the cycle, the PROCESS COMPLETE LED illuminates and the buzzer sounds.
   - The buzzer silences automatically after 1 min or earlier if the door is opened.
   - If the LED appears green, the cycle is complete.
   - If the LED appears flashing red, the cycle was aborted.

   - If a process failure occurs, the PROCESS FAILURE LED flashes, an alarm sounds, the process aborts, and a diagnostic message appears on the printout.

     Press CLEAR ALARM to silence the alarm.

     See "Diagnostic Messages" on page 6–8 for corrective action.

NOTE
The failure message appears against a red background in the critical alarms portion of the display window screen (Area f in Figure 3–3 on page 3–5).

See Table 4–2 on page 4–26 for details on status indicators and messages.

If the CONTROLS OFF/ON button is pressed during a cycle, the cycle aborts (after a 2 second timer expires). Therefore, this is not the recommended method to manually abort a cycle. Use the [ABORT] softkey instead. See "Canceling a Cycle (Manual Abort)" on page 4–30.

END OF CYCLE ROUTINE

WARNING

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

NOTE

For detailed information regarding failure and fault conditions, and informational messages, see “Failure Conditions” on page 6–3.

For information regarding troubleshooting and diagnostic messages, see Table 6–1 on page 6–4 through Table 6–7 on page 6–8.

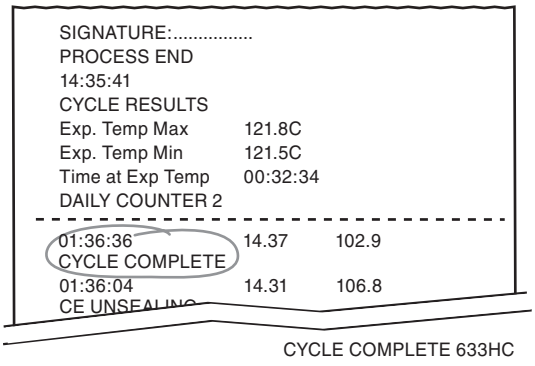
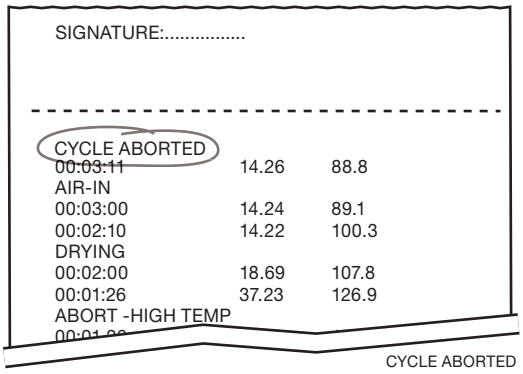
The status of the completed load should be verified before removing the load from the sterilizer. On the printout, check:

- The minimum chamber temperature during exposure is equal to or greater than the exposure temperature set point.
- The “Time at Exp Temp” is equal to or greater than the selected exposure time
- The printed record shows “CYCLE COMPLETE.”
- The green PROCESS COMPLETE indicator on the display is lit.

NOTE

Table 4–2 on page 4–26 outlines what to look for to determine if a cycle completed successfully or aborted.

TABLE 4–2. CYCLE RESULT DETERMINATION

Successful Cycle	Aborted Cycle
• CYCLE COMPLETE is printed on the printout below the CYCLE RESULTS.	• CYCLE ABORTED is printed on the printout.
SAMPLE PRINTOUT--COMPLETED CYCLE  	SAMPLE PRINTOUT--ABORTED CYCLE 
• CYCLE COMPLETE appears against a green background in the cycle information portion of the display window (Area d in Figure 3–3 on page 3–5). • PROCESS COMPLETE status indicator is green indicating a successfully completed cycle. ***NOTE*** *The message/phase clears/changes when the sterilizer door opens.*	• STANDBY appears against a flashing red background in the cycle information portion of the display window (Area d in Figure 3–3 on page 3–5). • The failure message appears against a red background in the critical alarms portion of the display window (Area f in Figure 3–3 on page 3–5). • Pulsing alarm tone is activated. • PROCESS COMPLETE status indicator is flashing red indicating an aborted cycle. • PROCESS FAILURE status indicator is flashing red. • The sterilizer's control system remains in STANDBY. • The alarm silences when CLEAR ALARM is pressed. • The message clears when the cause of the failure is corrected and CLEAR ALARM is pressed. • See "Diagnostic Messages" on page 6–8 for corrective action.
• The door unseals automatically and remains closed, ready to open.	• The door remains sealed. ***NOTE*** *The door remains sealed until the failure condition is acknowledged.* ***WARNING*** *POSSIBILITY OF INJURY: If a WATER IN DRAIN message displays, DO NOT operate the chamber door. Hot water in the chamber may spill if the door is opened. Wait until the message clears before attempting to open the door.*

UNLOADING THE STERILIZER

WARNING

RISK OF NON-STERILE DEVICE: After removing wrapped goods from the chamber, inspect for residual moisture (wet packs). Moisture on or within a package can potentially create a pathway for migration of microorganisms from the outside to the inside of a sterilized package.

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

BURN HAZARD: The door and chamber area could be HOT enough to cause burns. Wear personal protective equipment (PPE) when loading and unloading the chamber.

BURN HAZARD: Before removing a load from the chamber, unseal the door and wait about a minute for the steam to vent before opening the door. Stand back to avoid possible burns when lowering the door.

HOT SURFACES: The loading car or rack and shelves may be hot enough to cause burns. Wear protective gloves and eyewear when removing the load from the chamber.

POSSIBILITY OF INJURY: Wear protective eyewear, clothing, and gloves when handling liquids in containers.

POSSIBILITY OF INJURY: After completion of a liquids cycle, remove the container carefully, taking care not to agitate the liquid. If the load is agitated when removed from the chamber, the container may burst or crack.

POSSIBILITY OF INJURY: Do not operate the door while loading or unloading the sterilizer.

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

WARNING

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

BURN HAZARD: Flash sterilized unwrapped instruments could still be hot at the end of the cycle. These instruments could burn the patient if used immediately in surgical procedures. Use personal protective equipment when removing these items from the sterilizer and allow sufficient time for them to cool before using them in surgical procedures.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Use of sealed, unvented containers to process liquids can be result in permanent damage to the sterilizer.

NOTE

Before removing the load, be sure to check that the cycle was successful as indicated by the green PROCESS COMPLETE indicator. If the PROCESS COMPLETE indicator is flashing red (failure), check the printer tape for messages that indicate the cycle was aborted. See “End of Cycle Routine” on page 4–25.

To unload the sterilizer:

1. Unseal the door.

   The door(s) unseal automatically at the end of a successful cycle.

NOTE

Wait approximately 1 minute for the steam to vent before opening the door.

2. Open the door. See “Operating the Sterilizer Door” on page 4–6.
3. Remove the load. See “Operating the Loading Car and the Transfer Carriage” on page 4–14.

4. Close the door.

END OF DAY CHECKLIST

CLOSING THE DOOR

Close but do not seal the sterilizer door(s).

TURNING THE CONTROLS OFF

After daily operation, press CONTROLS OFF/ON to turn the sterilizer OFF.

NOTE

If you require operational readiness, leave the sterilizer ON to avoid the 20–30 minute warm-up period.

BLOWING DOWN THE STEAM BOILER

Blow-down frequency varies depending on water conditions. See Table 8–3 on page 8–4 for recommended intervals.

If your sterilizer has an integral steam boiler without automatic blow-down, blow down the boiler manually. See “Blowing Down a Steam Boiler Manually” on page 8–4.

Some Getinge USA steam boilers are configured for automatic blow-down. If your sterilizer has this feature, see “Steam Boiler Automatic Blow-down Package” on page 8–8 for instructions to set up the automatic blow-down option.

Blow-down is required less frequently when your sterilizer is connected to a Getinge RO (reverse osmosis) water treatment system. Contact your Getinge service representative for more details.

NOTE

A short boiler recovery time is necessary after the blow-down is completed.

CANCELING A CYCLE (MANUAL ABORT)

WARNING

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF INFECTION: Airborne microbial and particulate contamination is likely to be high in the decontamination area of the sterile processing department. Wear appropriate personal protective equipment (PPE) when preparing items for cleaning.

BURN HAZARD: The door and chamber area could be HOT enough to cause burns. Wear personal protective equipment (PPE) when loading and unloading the chamber.

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

CAUTION

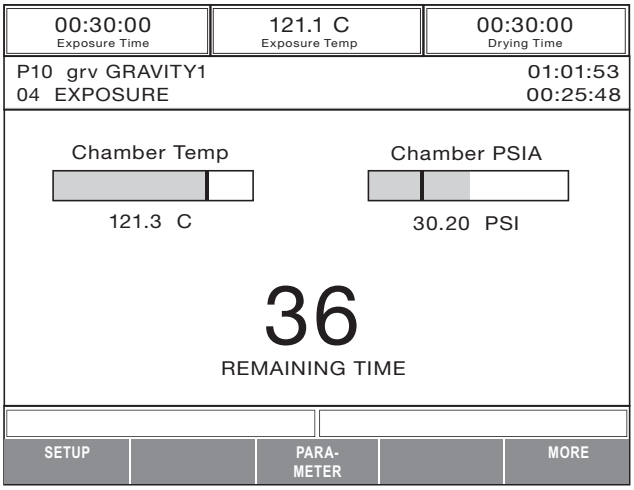
POSSIBILITY OF EQUIPMENT DAMAGE: Use of sealed unvented containers to process liquids can result in permanent damage to the sterilizer.

A cycle can be canceled during any phase of operation; however, the softkeys at the bottom of the display screen show different labels, depending on the phase of the cycle. If the cycle is in a timed phase (e.g., exposure or drying), [MORE] displays. If the cycle is in an untimed phase (e.g., heat-up), [ABORT] displays.

TIMED PHASE

During a timed phase (e.g., exposure), the In-Cycle screen displays (see Figure 4–11 on page 4–31). Depending upon your settings, the In-Cycle screen displays either bar graphs (“Bar Graph Screen” on page 3–7), details (“Details Screen” on page 3–8), or plot graphs (“Plot Graph Screen” on page 3–8).

FIGURE 4–11. IN-CYCLE SCREEN



WS-0096 HC

NOTE

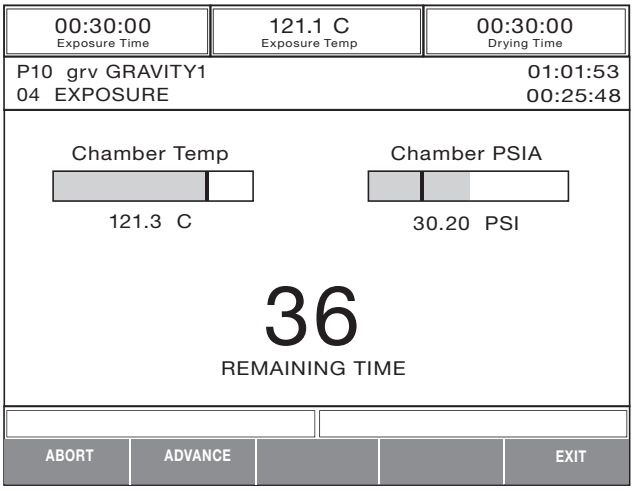
If the sterilizer is not in a timed phase (e.g., waiting for the chamber to heat up), [ABORT] displays in the same position as [MORE] in Figure 4–11.

To cancel a cycle during a timed phase:

1. Press [MORE].

   The following screen displays:

FIGURE 4–12. IN-CYCLE SCREEN (ABORT)



WS-0157 HC

2. Press [ABORT].

   The sterilizer ceases all processing activity and begins an abort sequence (including exhaust or liquid exhaust, dry, air-in, and standby phases).

3. Wait for the appropriate exhaust phase to complete and STANDBY is displayed.

4. Press CLEAR ALARM to acknowledge the aborted cycle.

5. Press OPEN DOOR to unseal the door(s).

6. Wait approximately 1 minute for the steam to vent before opening the door.

NOTE

If the load was a liquid load, wait 15 minutes before removing the load from the chamber.

7. Verify the status of the load. See “End of Cycle Routine” on page 4–25.

WARNING

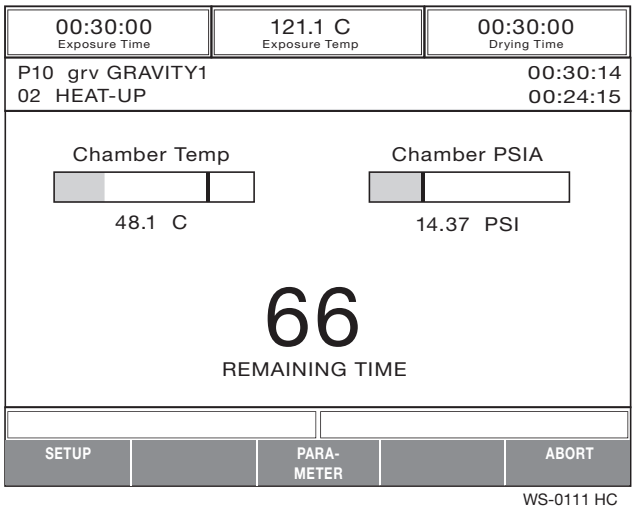
RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

8. Remove the load from the chamber.

UNTIMED PHASE

During an untimed phase (e.g., heat-up), the In-Cycle screen displays (Figure 4–13). Depending upon your settings, the In-Cycle screen displays either bar graphs (“Bar Graph Screen” on page 3–7), details (“Details Screen” on page 3–8), or plot graphs (“Plot Graph Screen” on page 3–8).

FIGURE 4–13. IN-CYCLE SCREEN



NOTE
If the sterilizer is in a timed phase (e.g., exposure), [MORE] displays in the same position as [ABORT] in Figure 4–13 on page 4–32.

To cancel the cycle during an untimed phase:

1. Press [ABORT].

   The sterilizer ceases all processing activity and begins an abort sequence (including exhaust or liquid exhaust, dry, air-in, and standby phases).

2. Wait for the appropriate exhaust phase to complete and STANDBY is displayed.

3. Press CLEAR ALARM to acknowledge the aborted cycle.

4. Press OPEN DOOR to unseal the door(s).

5. Wait approximately 1 minute for the steam to vent before opening the door.

NOTE
If the load was a liquid load, wait 15 minutes before removing the load from the chamber.

6. Verify the status of the load. See “End of Cycle Routine” on page 4–25.

WARNING
RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

7. Remove the load from the chamber.

ADVANCING A CYCLE

This feature may be used to terminate a timed phase and advance to the next phase. Timed phases include: purge, liquid dwell, exposure, liquid exposure, drying, equalization, and leak test.

WARNING
RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

WARNING

RISK OF INFECTION: Airborne microbial and particulate contamination is likely to be high in the decontamination area of the sterile processing department. Wear appropriate personal protective equipment (PPE) when preparing items for cleaning.

BURN HAZARD: The door and chamber area could be HOT enough to cause burns. Wear personal protective equipment (PPE) when loading and unloading the chamber.

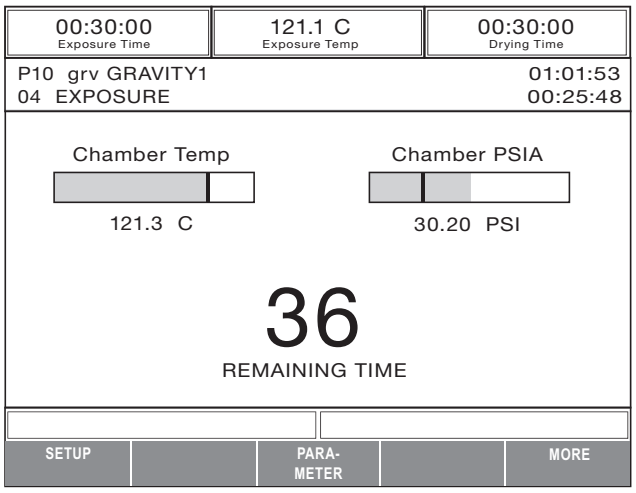
POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

NOTE

The cycle advance feature is intended for use by qualified service personnel only. Improper use of this feature can compromise the integrity of the processing cycle.

FIGURE 4–14. IN-CYCLE SCREEN



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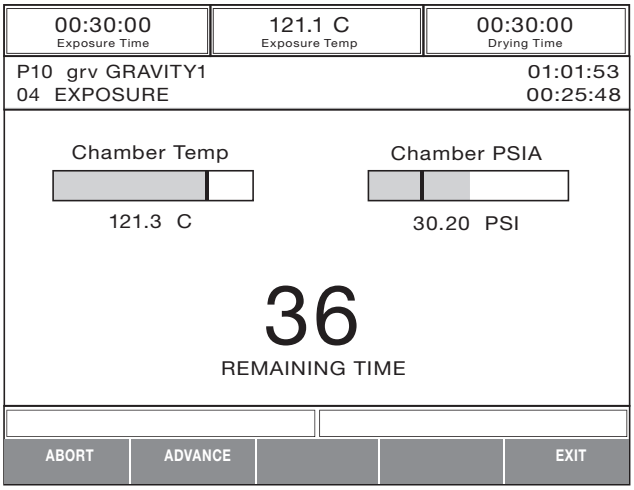
To advance a cycle:

1. From the In-Cycle screen, press [MORE].

   The softkey labels at the bottom of the screen change as shown in Figure 4–15 on page 4–35.

FIGURE 4–15. IN-CYCLE SCREEN (ADVANCE CYCLE)



2. Press [ADVANCE].

   The *CYCLE ADVANCED* message displays for 5 seconds and is printed on the paper tape.

   After a cycle phase is advanced, the cycle continues through the exhaust, drying, and air-in phases but the controls enter STANDBY mode, bypassing the CYCLE COMPLETE phase.

3. Verify the status of the load. See “End of Cycle Routine” on page 4–25.

WARNING
RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

4. Remove the load from the chamber.

SHUTTING DOWN THE STERILIZER

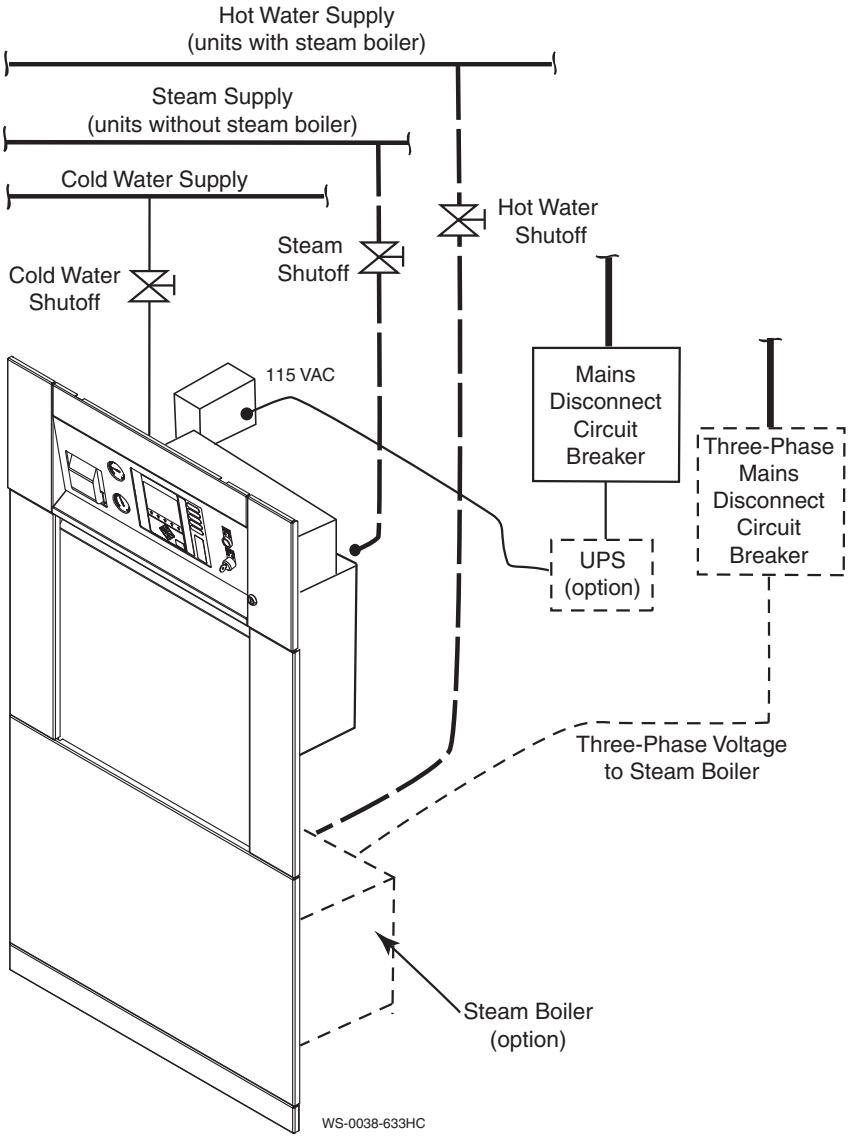
In an emergency, it may be necessary to remove electrical power from the sterilizer or to turn off the steam and water supplies. All users should know the location of the mains disconnect circuit breaker and the steam and water supply shutoff valves at the sterilizer site.

NOTE

The CONTROLS OFF/ON switch turns OFF the controls only; it does not remove all power from the sterilizer.

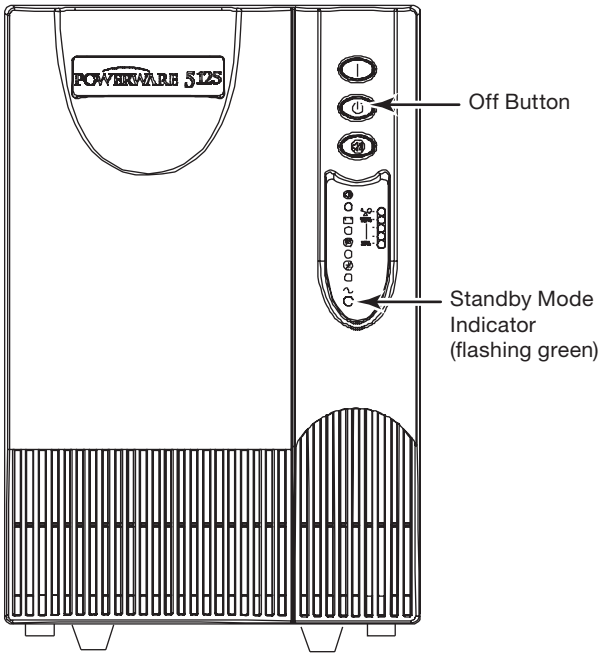
TURNING OFF ELECTRICAL POWER

FIGURE 4–16. CIRCUIT BREAKERS



1. Turn OFF power to the sterilizer at the mains disconnect circuit breaker.

FIGURE 4–17. UNINTERRUPTIBLE POWER SUPPLY OFF SWITCH



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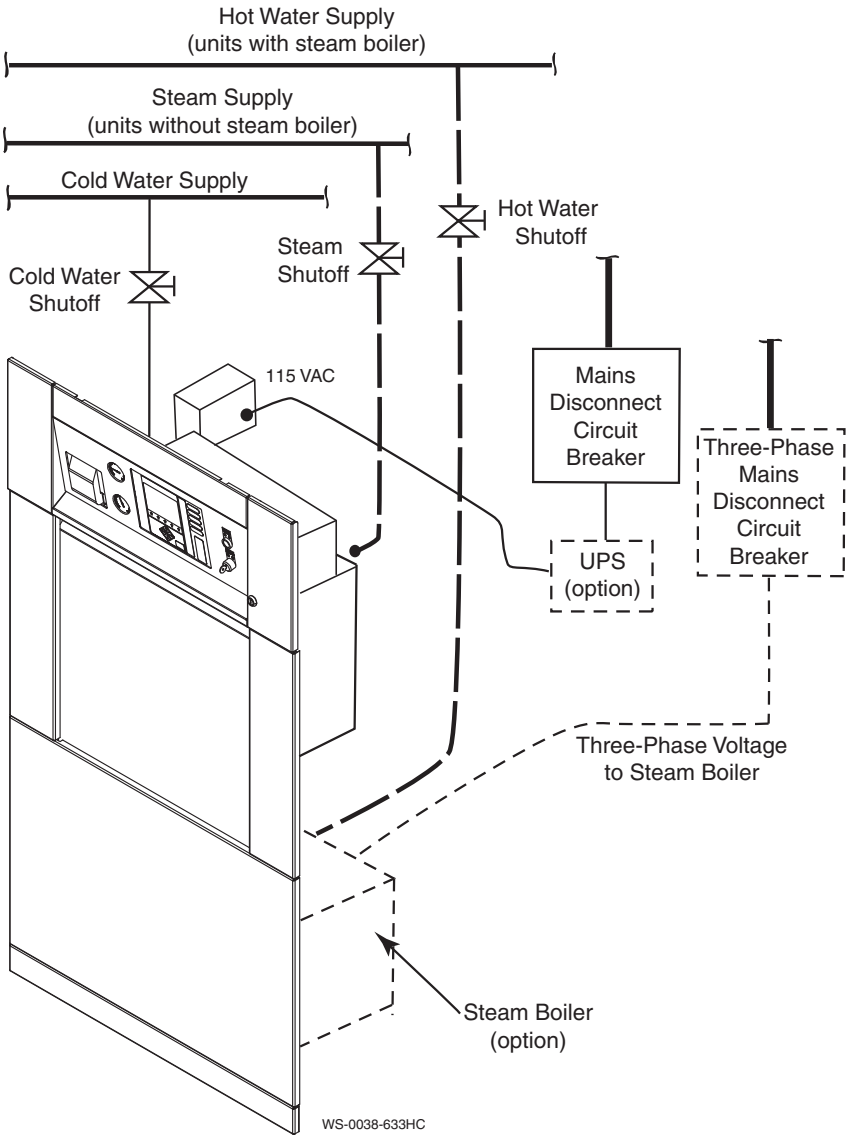
2. If the sterilizer has an uninterruptible power supply (UPS), press the Off/ Standby switch on the UPS.

3. If the sterilizer has a steam boiler, turn off the three-phase voltage at the circuit breaker. See Figure 4–16 on page 4–36.

TURNING OFF THE STEAM AND WATER SUPPLIES

1. If the sterilizer does not have a steam boiler, turn off the steam and cold water supplies.

FIGURE 4–18. SHUTOFF VALVES



RECOVERING FROM ELECTRICAL POWER FAILURE

WARNING

RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

WARNING

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Use of sealed unvented containers to process liquids can result in permanent damage to the sterilizer.

When a power failure occurs, the controls store cycle information in short-term, non-volatile memory. This information includes whether a cycle was in progress, the current cycle type, the current cycle phase, and elapsed time in the current phase.

NOTE

Cycle assignments and settings are backed up by a lithium battery inside the control box. This battery is not user-replaceable but has a 10-year shelf-life.

If the sterilizer has an uninterruptible power supply (UPS), the UPS provides power to the sterilizer controls. See “Uninterruptible Power Supply” on page 8–11 for information on the UPS.

POWER FAILURE DURING STANDBY

If a power failure occurs while in standby, the sterilizer returns to standby mode, when power is restored.

POWER FAILURE DURING A CYCLE

If power is interrupted for less than 60 seconds and conditions are still within reset parameters when power is restored, the sterilizer continues the cycle from the appropriate phase when power was interrupted. If conditions are not acceptable, the cycle aborts and returns to standby mode.

If power is interrupted for 60 seconds or more, the sterilizer aborts the cycle automatically when power is restored, relieves pressure and vacuum in the chamber, and returns to standby mode.

OPENING THE DOOR MANUALLY

WARNING

POSSIBILITY OF INJURY: Opening the door manually requires retracting the door gasket, which should be performed by qualified service personnel only. This procedure requires access to the service side of the equipment.

HOT SURFACES: The pipes on the outside of the chamber may be hot! Avoid touching the pipes when opening and closing the bleed valves.

BURN HAZARD: Hot steam can cause serious injury. View the CHAMBER pressure gauge while the steam bleeds from the chamber. Wait until the CHAMBER pressure gauge reads zero (0 psig) or less (negative) before operating manual valves.

BURN HAZARD: Hot steam can cause serious injury. DO NOT attempt to open the sterilizer chamber door unless the CHAMBER pressure gauge on the front panel reads zero (0 psig) or less (negative).

RISK OF INFECTION: Airborne microbial and particulate contamination is likely to be high in the decontamination area of the sterile processing department. Wear appropriate personal protective equipment (PPE) when preparing items for cleaning.

RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

BURN HAZARD: Before removing a load from the chamber, unseal the door and wait about a minute for the steam to vent before opening the door. Stand back to avoid possible burns when lowering the door.

BURN HAZARD: To avoid injury, DO NOT turn the manual valves with the chamber door open.

WARNING

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

POSSIBILITY OF INJURY: If a condition exists OTHER THAN an electrical outage, call qualified service personnel before operating the sterilizer. Failure to do so may result in personal injury.

POSSIBILITY OF INJURY: If a WATER IN DRAIN message displays, DO NOT operate the chamber door. Hot water in the chamber may spill if the door is opened. Wait until the message clears before attempting to open the door.

POSSIBILITY OF INJURY: Use only vented or open containers to process liquids in this sterilizer. Use of sealed, unvented containers to process liquids can result in severe personal injury due to container breakage. Getinge USA does NOT recommend or endorse use of such containers.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Use of sealed unvented containers to process liquids can result in permanent damage to the sterilizer.

Manual gasket retraction may be necessary if access to the chamber is required and UNSEAL DOOR is inoperative. All faults and failures unrelated to an electrical outage should be reported to Getinge USA.

The following sequence outlines the procedure to open the door:

1. “Preparation” on page 4–42
2. “Removing Pressure from the Gasket” on page 4–46
3. “Lowering the Door” on page 4–50
4. “Removing the Load and Closing the Door” on page 4–52
5. “Resetting the Manual Valves” on page 4–52

   Be sure to follow this sequence when opening the door.

PREPARATION

WARNING

POSSIBILITY OF INJURY: Retracting the door gasket manually should be performed by qualified service personnel only. This procedure requires access to the service side of the equipment.

POSSIBILITY OF INJURY: If a WATER IN DRAIN message displays, DO NOT operate the chamber door. Hot water in the chamber may spill if the door is opened. Wait until the message clears before attempting to open the door.

SHOCK HAZARD: Disconnect all electrical supply circuits to ensure that the sterilizer components will not be energized prior to the performance of required adjustments and testing.

The chamber pressure gauge on the front panel should read zero (0 psig) before opening the sterilizer chamber door. Follow these instructions to relieve chamber pressure to permit opening the door.

1. Turn OFF the steam supply.
2. Turn OFF power to the sterilizer at the power source (the circuit breakers on the sterilizer power box).

WARNING

HOT SURFACES: The pipes on the outside of the chamber may be hot! Avoid touching the pipes when opening and closing the bleed valves.

BURN HAZARD: Hot steam can cause serious injury. View the CHAMBER pressure gauge while the steam bleeds from the chamber. Wait until the CHAMBER pressure gauge reads zero (0 psig) or less (negative) before operating manual valves.

NOTE

The locations of the manual valves depend upon the size of the sterilizer's chamber. For an overview of the valve locations, see either Figure 4–19 on page 4–43 (26-inch units) or Figure 4–20 on page 4–44 (39- and 51-inch units).

FIGURE 4–19. MANUAL VALVES (26-INCH UNIT)

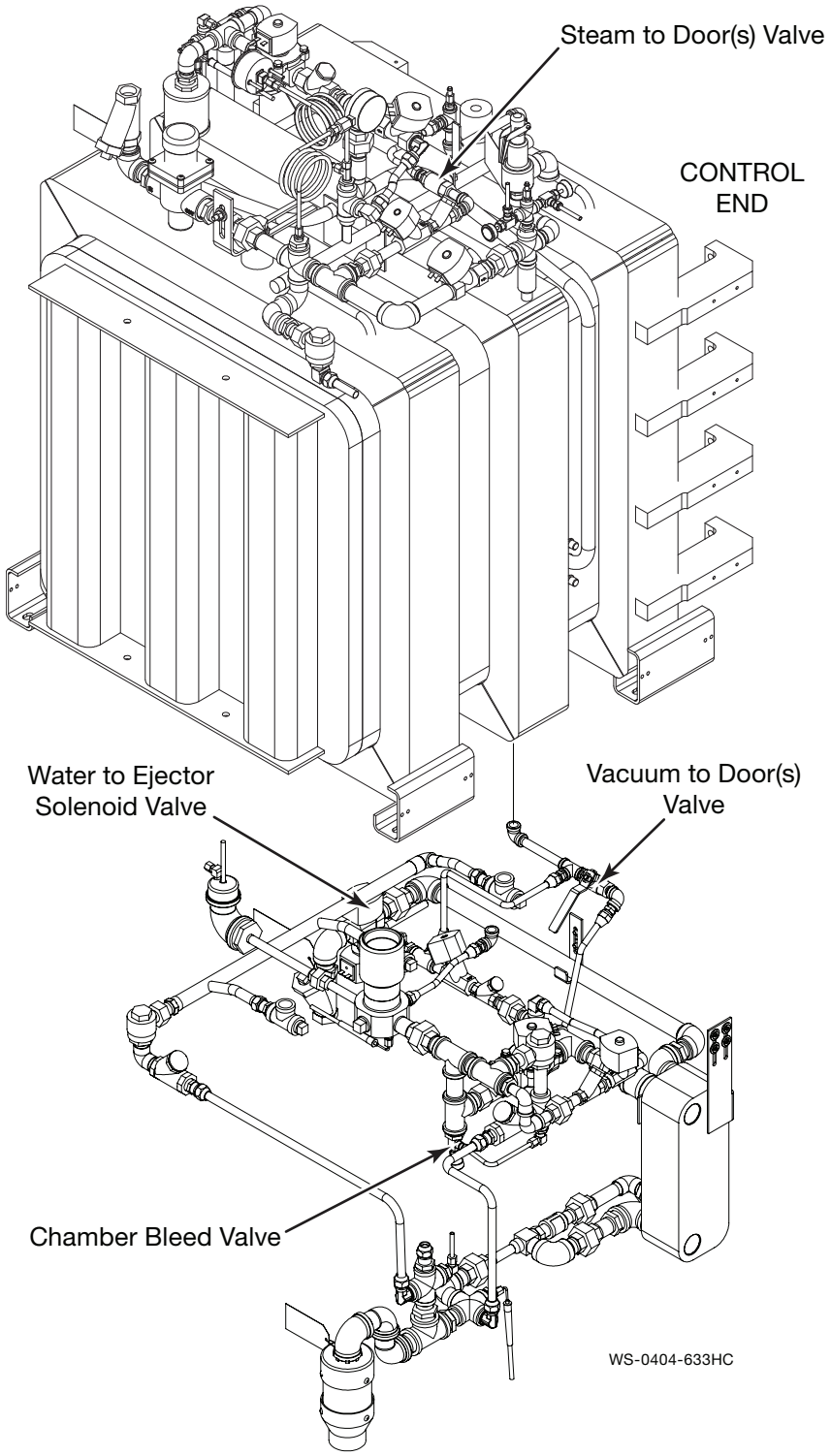


FIGURE 4–20. MANUAL VALVES (39- AND 51-INCH UNITS)

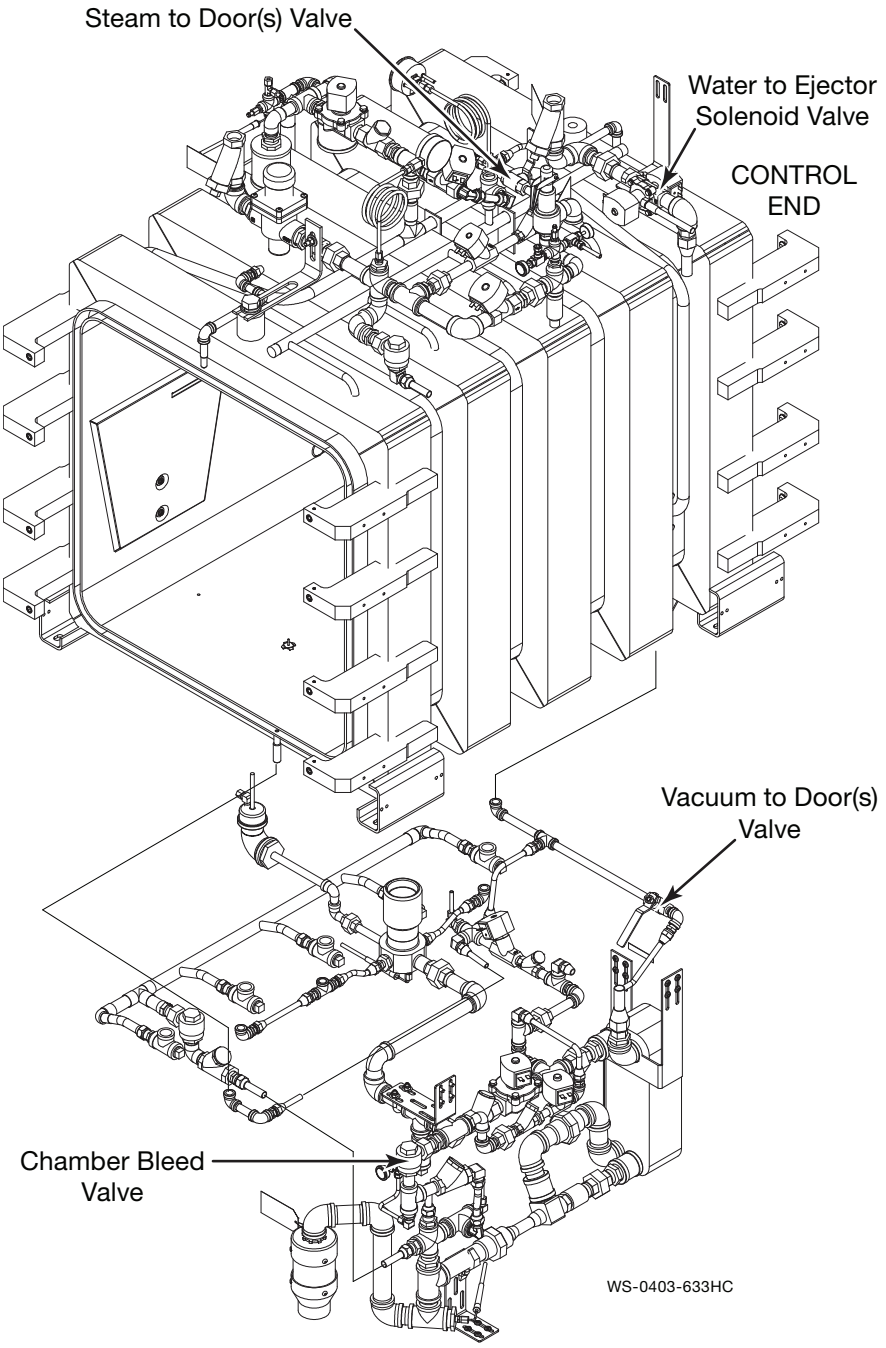


FIGURE 4–21. CHAMBER BLEED VALVE (26-INCH UNIT)

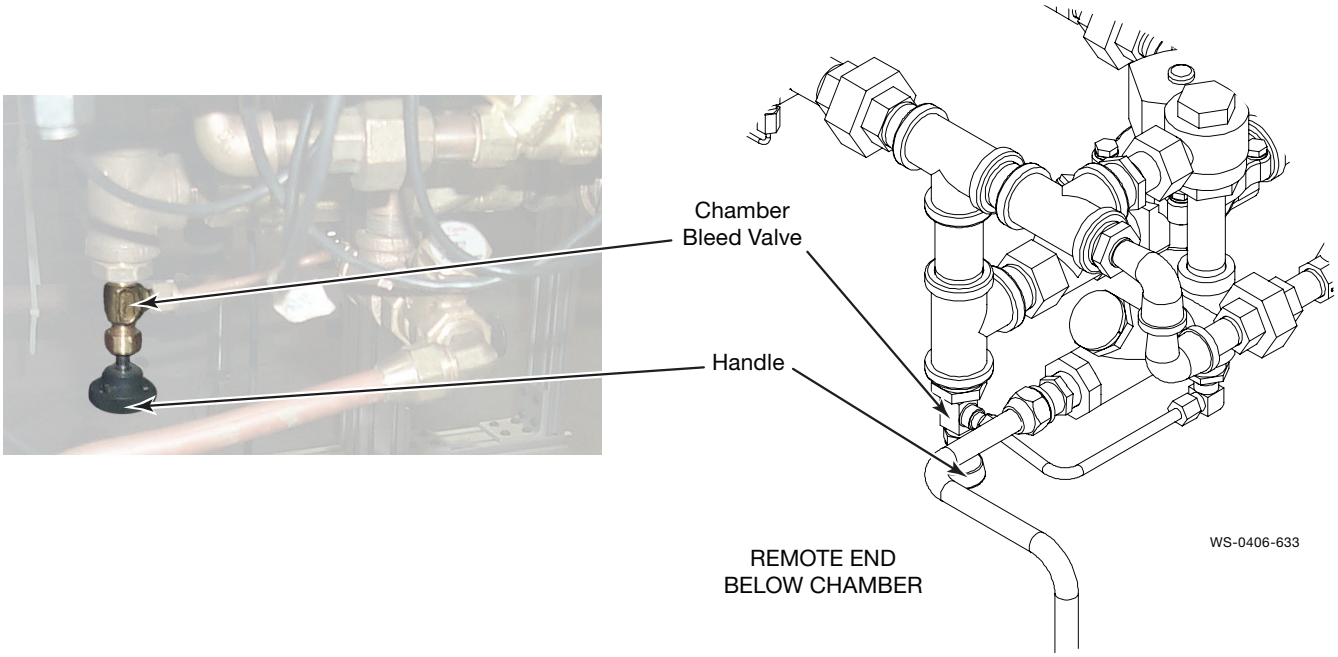
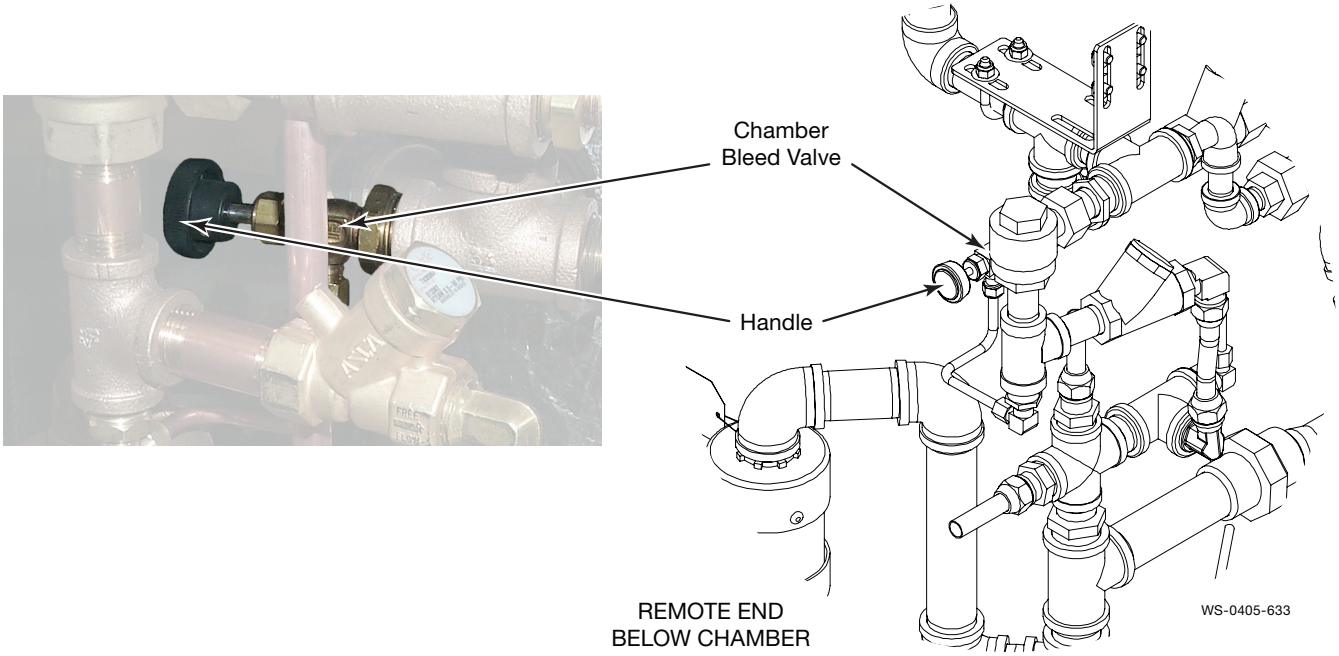


FIGURE 4–22. CHAMBER BLEED VALVE (39- AND 51-INCH UNITS)



3. Locate the chamber bleed valve.

NOTE

The chamber bleed valve is located in the service area on the left side of the sterilizer below the chamber.

4. Open the valve by rotating the handle COUNTERCLOCKWISE to release any steam from the chamber.

REMOVING PRESSURE FROM THE GASKET

WARNING

BURN HAZARD: Hot steam can cause serious injury. DO NOT attempt to open the sterilizer chamber door unless the CHAMBER pressure gauge on the front panel reads zero (0 psig) or less (negative).

1. Verify the chamber pressure gauge reads zero (0 psig) or less (negative).

2. Locate the water to ejector valve.

NOTE

On 26-inch units, the water to ejector valve is located in the service area on the right side of the sterilizer below the chamber. See Figure 4–24 on page 4–47.

On 39- and 51-inch units, the water to ejector valve is located in the service area on the left side of the sterilizer above the chamber. See Figure 4–23 on page 4–47.

FIGURE 4–23. WATER TO EJECTOR SOLENOID VALVE (26-INCH UNIT)

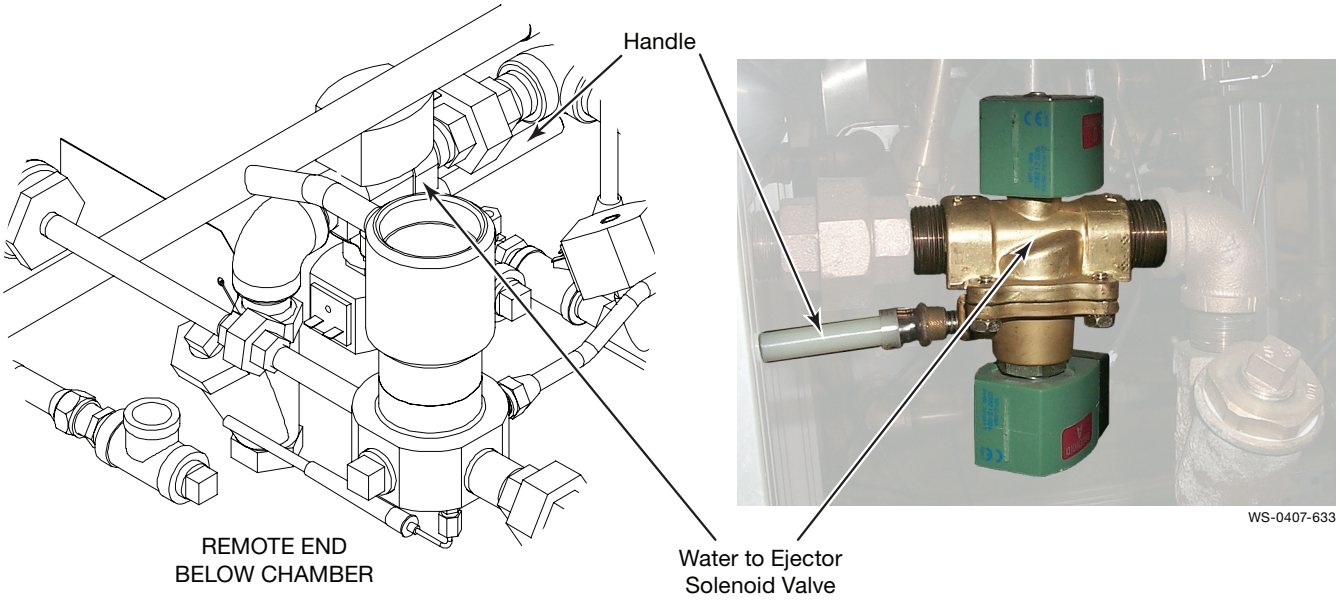
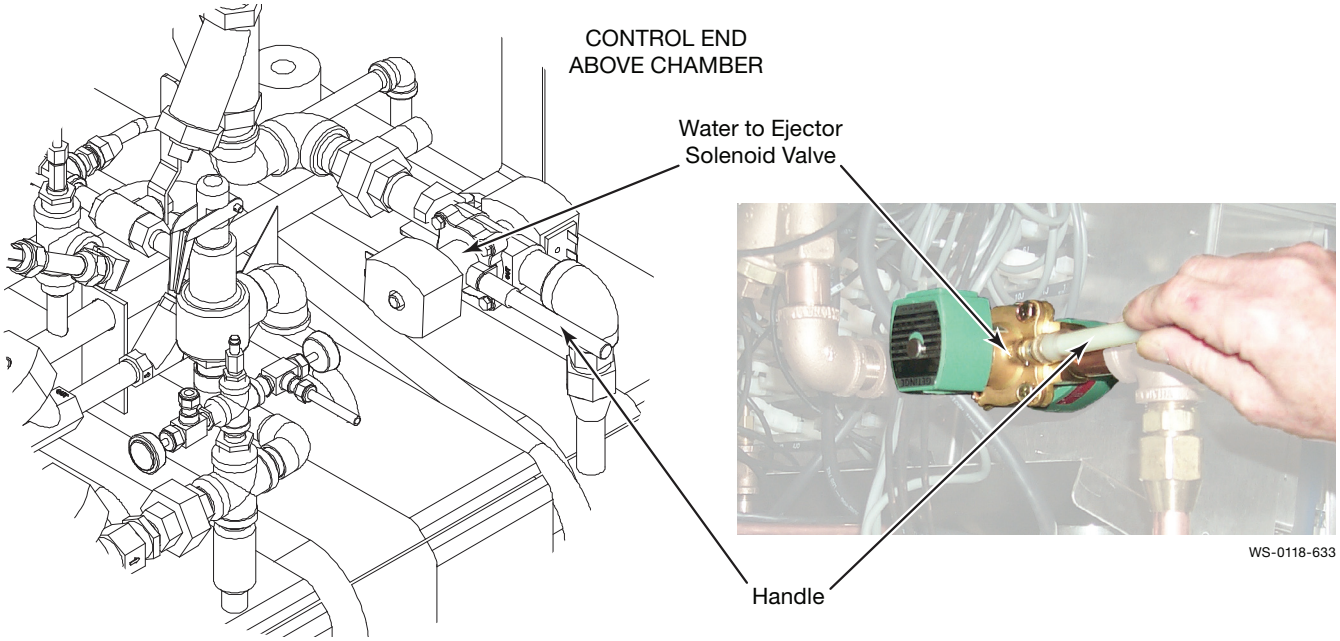


FIGURE 4–24. WATER TO EJECTOR SOLENOID VALVE (39- AND 51-INCH UNITS)



3. Turn the water to ejector valve ON by pushing the white handle IN and rotating it CLOCKWISE approximately 1/4 turn to the open position indicated on the valve housing.

   The water flow creates a vacuum to retract the gasket.

FIGURE 4–25. STEAM TO DOOR(S) VALVE (26-INCH UNIT)

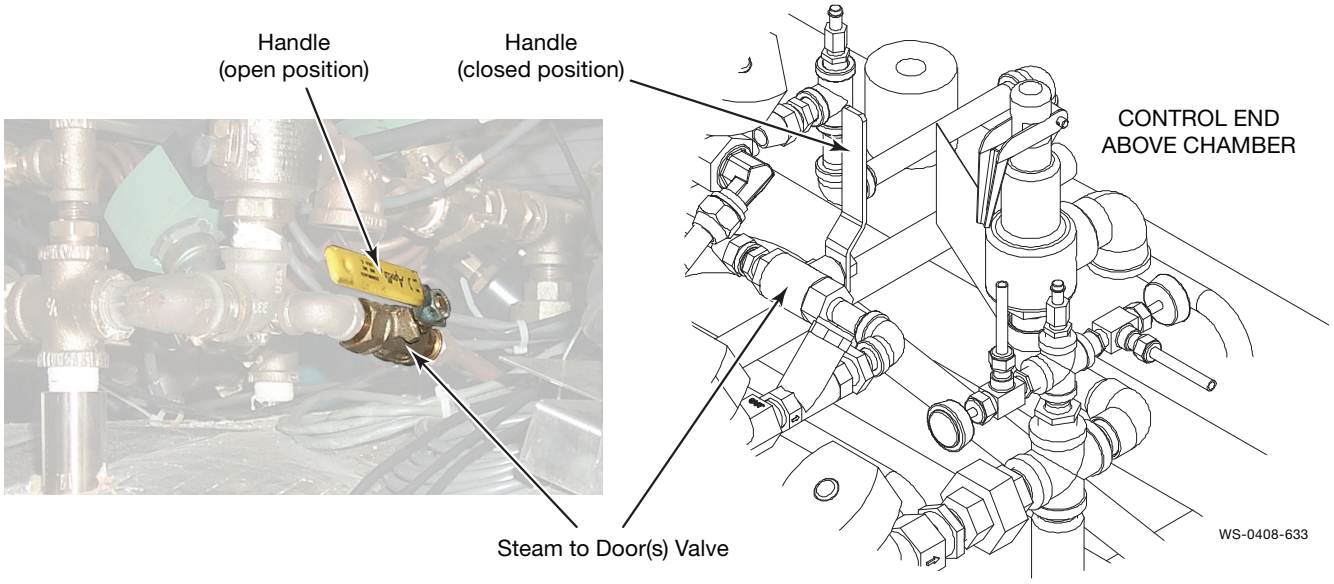
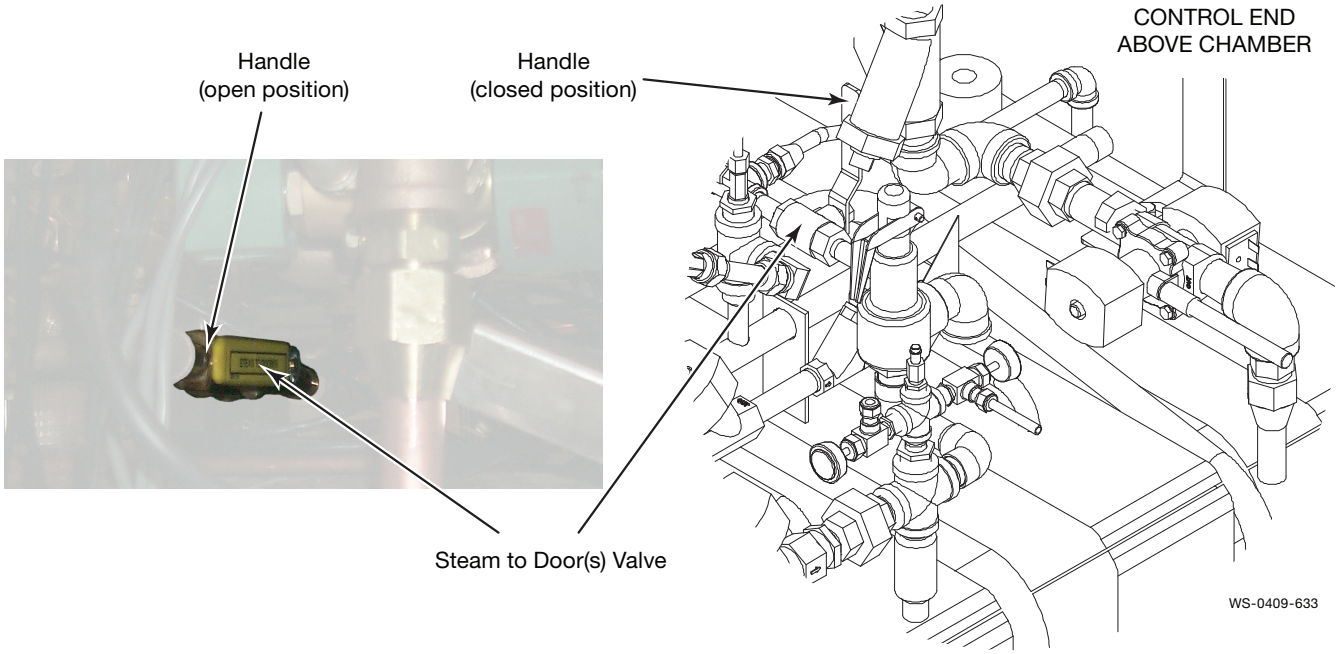


FIGURE 4–26. STEAM TO DOOR(S) VALVE (39- AND 51-INCH UNITS)



4. Locate the manual valve labeled “STEAM TO DOOR(S).”

NOTE

The STEAM TO DOOR(S) valve is located in the service area on the left side of the sterilizer above the chamber.

5. CLOSE the valve by rotating the handle CLOCKWISE.

   This turns OFF the steam supply to the door gasket.

FIGURE 4–27. VACUUM TO DOOR(S) VALVE (26-INCH UNIT)

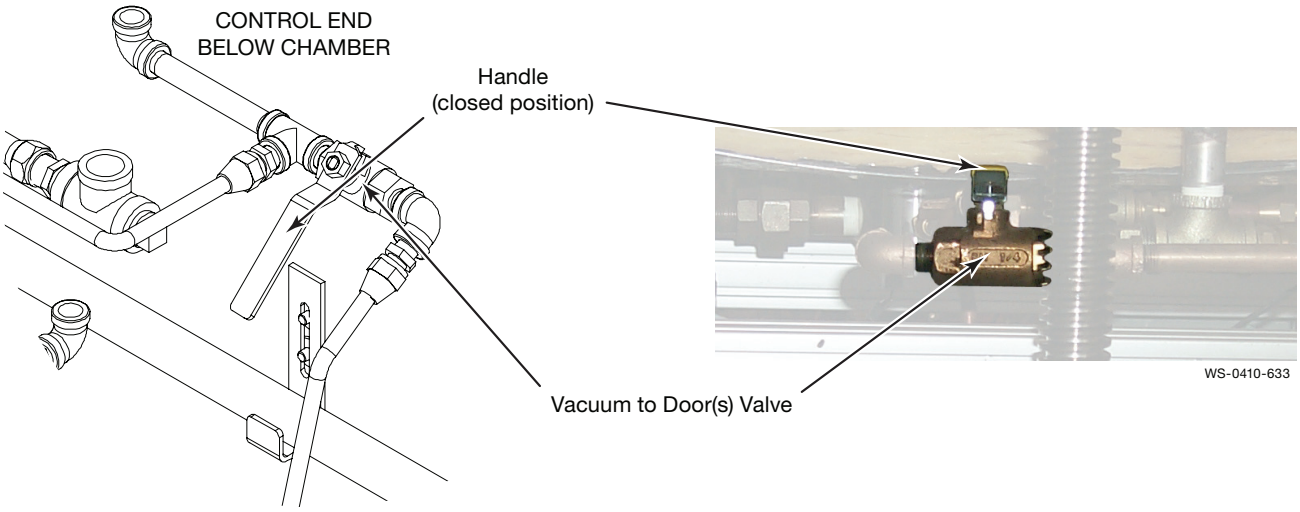
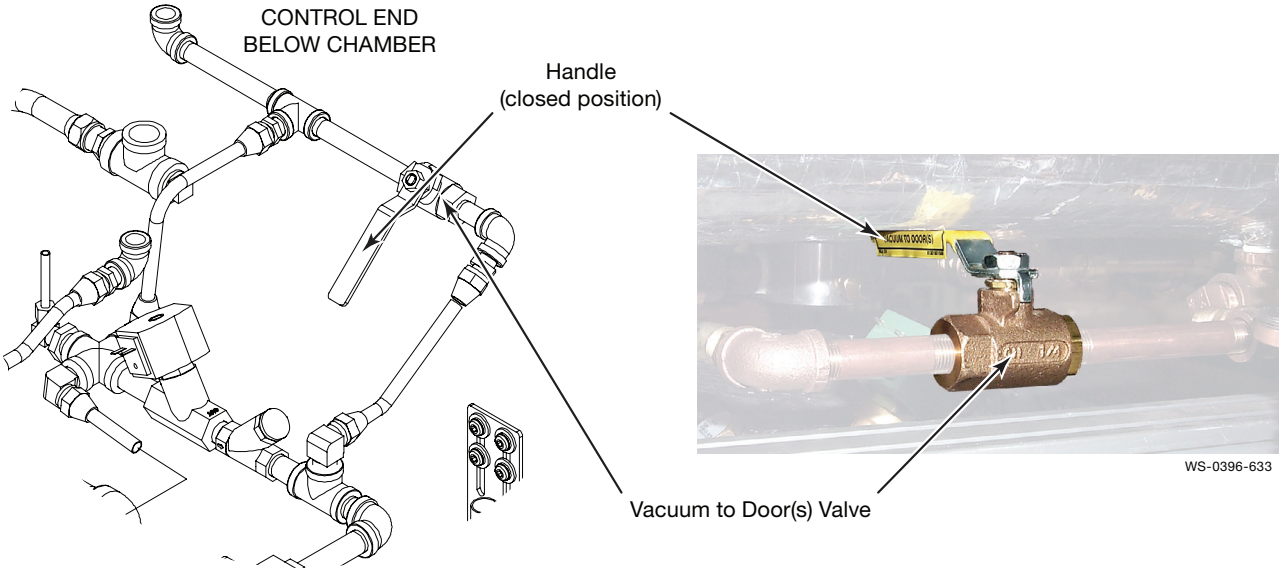


FIGURE 4–28. VACUUM TO DOOR(S) VALVE (39- AND 51-INCH UNITS)



6. Locate the manual valve labeled “VACUUM TO DOOR(S)”.

NOTE

The VACUUM TO DOOR(S) valve is located in the service area on the front side of the sterilizer below the chamber.

If the chamber pressure gauge reads less than zero (negative psig), you will hear a sudden rush of air around the door when you open the VACUUM TO DOOR(S) valve.

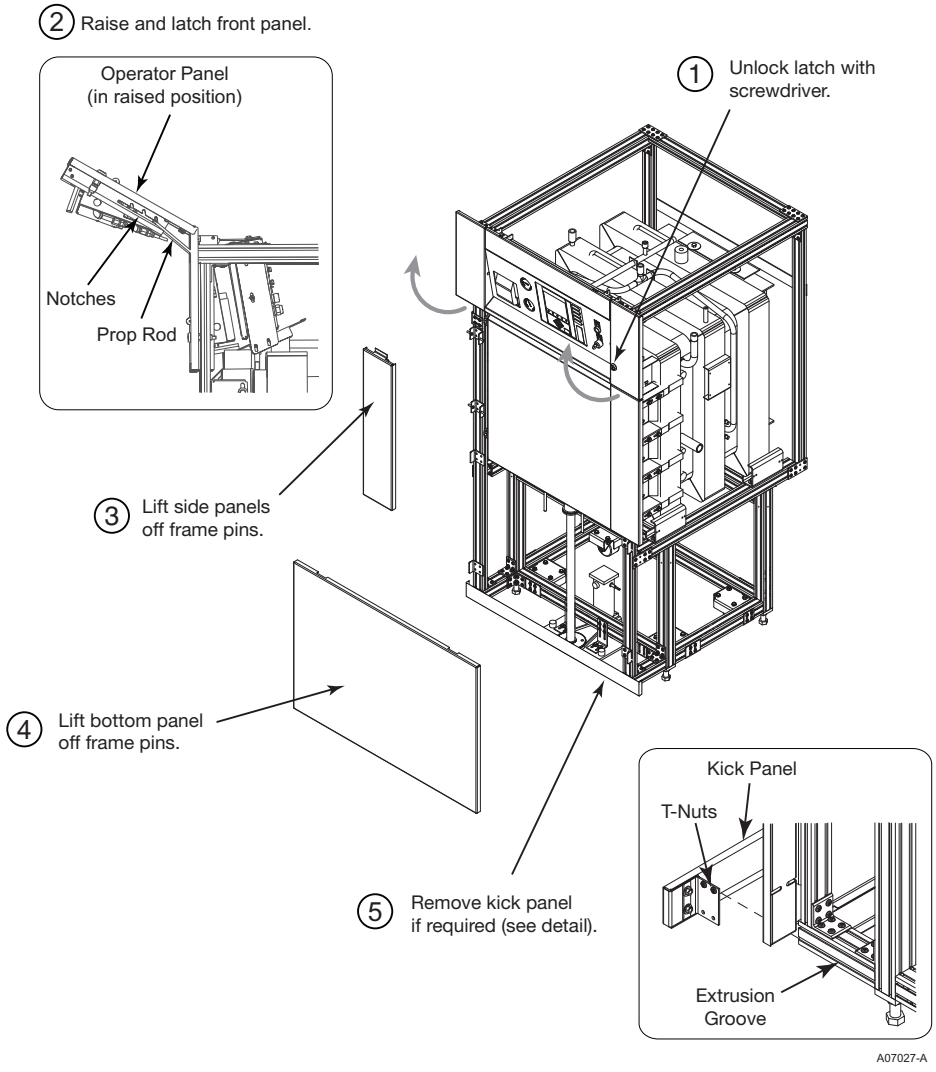
7. OPEN the valve by rotating the handle COUNTERCLOCKWISE.

   This allows a vacuum to the door gasket(s).

8. Leave the valves in this state for at least 30 seconds before proceeding.

LOWERING THE DOOR

FIGURE 4–29. REMOVING THE FRONT PANELS



To remove the front panels:

1. Use a screwdriver to turn the keyhole latch 1/4 turn and unlock the panels.

2. Unlatch the top panel, swing it open, and prop it open with the prop rods found on the left and right sides of the panel.

3. Lift the left and right side panels off the frame pins. The pins slide through the slots on either side of the panels and lift out of the slot in the lower panel.

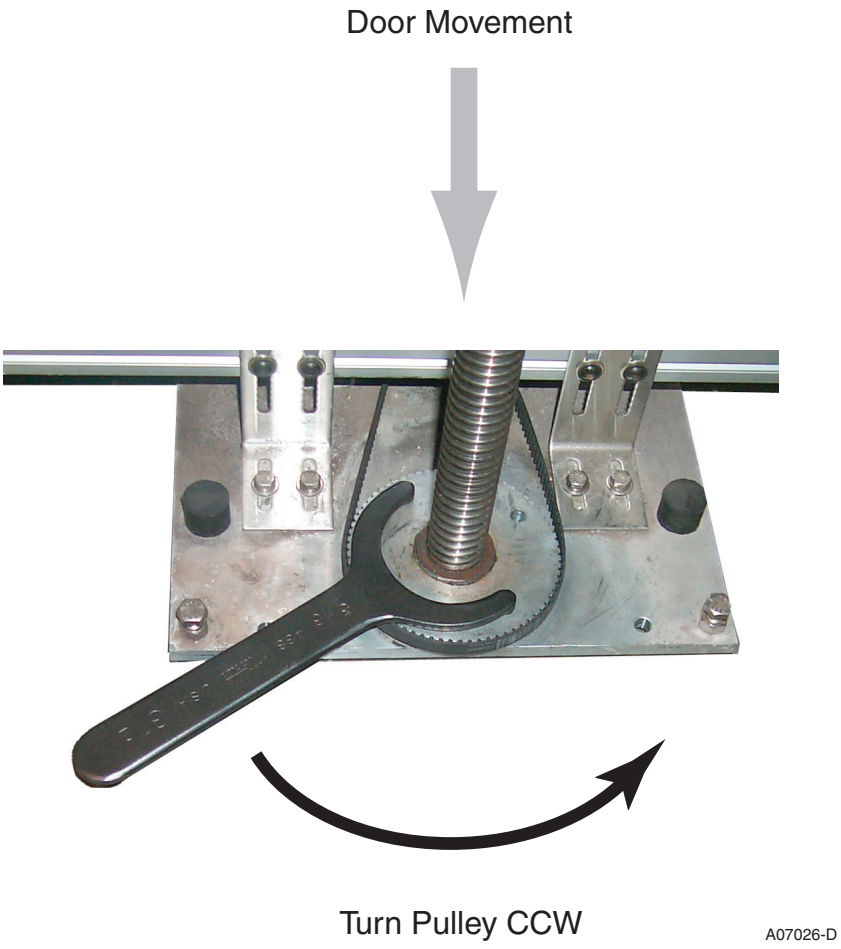
4. Lift the bottom panel off the frame pins.

5. Remove the bottom kick panel by removing the hardware that secures the kick panel to the sterilizer frame.

WARNING

BURN HAZARD: Before removing a load from the chamber, unseal the door and wait about a minute for the steam to vent before opening the door. Stand back to avoid possible burns when lowering the door.

FIGURE 4–30. LOWERING THE DOOR MANUALLY



If power is not available:

1. Locate the supplied spanner wrench. The wrench is located in a pocket on the side of the sterilizer.

2. Insert the spanner wrench into the holes in the pulley wheel.

3. Rotate the pulley wheel counterclockwise (CCW) until the door is low enough to remove the load.

REMOVING THE LOAD AND CLOSING THE DOOR

1. Verify the status of the load. See “End of Cycle Routine” on page 4–25.
2. Remove the load.
3. Using the supplied spanner wrench, turn the door drive pulley CLOCKWISE until the door is closed. Because of the small turning radius, this process requires many revolutions.
4. Reattach the front panels by reversing the steps in “Lowering the Door” on page 4–50.

RESETTING THE MANUAL VALVES

After the load is removed, it is necessary to reset the manual valves.

WARNING

BURN HAZARD: To avoid injury, DO NOT turn ON the manual valve labeled “STEAM TO DOOR(S)” with the chamber door open.

With the sterilizer door(s) closed:

1. Close and latch the top control panel.
2. CLOCSE the manual valve labeled “VACUUM TO DOOR(S)” by rotating the handle CLOCKWISE.
3. OPEN the manual valve labeled “STEAM TO DOOR(S)” by rotating the handle COUNTERCLOCKWISE.
4. Turn the water to ejector valve OFF manually by rotating the white handle COUNTERCLOCKWISE approximately 1/4 turn.
5. CLOSE the chamber bleed valve by rotating the handle CLOCKWISE.
6. Turn ON power to the sterilizer.
7. Turn the steam supply ON.

   The sterilizer is ready for operation.

WARNING

POSSIBILITY OF INJURY: If a condition exists OTHER THAN an electrical outage, call qualified service personnel before operating the sterilizer. Failure to do so may result in personal injury.

PERFORMANCE TESTING

BIOLOGICAL MONITORING

Biological monitoring is used to document the efficacy of specific steam sterilization cycles.

- A biological indicator test pack should be used during initial installation of steam sterilizers and after major repairs.
- A biological indicator test pack should be used in steam sterilization loads weekly, preferably daily.
- Each load containing implantable devices must be monitored. Whenever possible, the implantable devices should be quarantined until the results of the biological testing are available.

The Getinge USA Biosign Biological Indicators are self-contained test units for monitoring steam sterilization cycles. The indicators may also be used for monitoring steam gravity (flash) sterilization cycles. Biosign is available as an individual test (Biosign Indicator - Part No. 61301600022) or as a pre-assembled single-use test pack (Biosign EZ-VU Test Pack Kit - Part No. 61301603337).

BOWIE AND DICK TEST

The Getinge USA S.M.A.R.T. (Steam Mechanical Air Removal Test) Pack provides a consistent, cost-effective method to perform the daily Bowie and Dick test. S.M.A.R.T. Packs (Part No. 61301668650) are available through your Getinge USA representative. Follow the instructions on the S.M.A.R.T. Pack.

NOTE

The Bowie and Dick test should be run daily.

For best results, run an empty chamber prevacuum cycle to warm up the sterilizer prior to running the Bowie and Dick test cycle.

The S.M.A.R.T. Pack should be the only load item in the chamber during the Bowie and Dick test.

1. Load the test pack and close the door.
2. Select the Bowie and Dick test cycle.
3. Press START to run the cycle.
4. Evaluate the test results:
   a. If the sterilizer passes the test, you may proceed with normal operation.
   b. If the sterilizer fails the test, run a vacuum leak test to determine if the sterilizer is functioning correctly. See “Vacuum Leak Test” on page 4–54.

VACUUM LEAK TEST

If the Bowie and Dick test fails, perform the vacuum leak test.

To run a vacuum leak test cycle:

1. Make sure the sterilizer chamber is empty.
2. Close the sterilizer door(s).
3. Select the vacuum leak test cycle.
4. Press START.
   a. The vacuum leak test cycle begins.
   b. The cycle includes a conditioning phase, a 3 minute exposure phase, a 15 minute drying phase, and a 5 minute dwell phase followed by a 15 minute leak test. The test takes approximately 40 minutes.
   c. During the cycle, LEAK TEST displays.
   d. At the end of the cycle, the buzzer sounds.
5. Check the results:
   a. If the sterilizer passes the test, CYCLE COMPLETE displays.
      - Repeat the air removal test (Bowie and Dick test), carefully following the instructions on the S.M.A.R.T. Pack.
      - If the sterilizer fails the Bowie and Dick test a second time, consult the Bowie and Dick test pack manufacturer or a qualified Getinge USA service representative.
   b. If the sterilizer fails the test (*LEAK TEST FAIL*), shut down the sterilizer and check the condition of the gasket. If the gasket requires replacement, call service. Do not process any loads in the sterilizer until the problem is identified and corrected.

SECTION 5 PROCESS DESCRIPTIONS

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

A 633HC Steam Sterilizer is programmed with different cycles:

- prevacuum
- Bowie and Dick test
- gravity
- flash 3+
- flash 10+
- liquids
- vacuum leak test

This section provides an overview of each cycle provided with the sterilizer and the definition of each parameter.

NOTE

Not all parameters within a cycle are adjustable.

FACTORY SET PARAMETERS

The 633HC Steam Sterilizer is shipped with 8 prevacuum, 1 Bowie and Dick test, 6 gravity, 4 flash, 1 liquids, and 1 vacuum leak test in the sequence listed in Table 5–1.

The preset cycles may be reassigned (resequenced) if desired. Cycle resequencing is performed by a qualified Getinge USA representative using proprietary software.

TABLE 5–1. FACTORY SET CYCLE PARAMETERS

Cycle		Factory Set Parameters		
Type	**Number Available**	**Exposure Temperature**	**Exposure Time**	**Drying Time or Cooldown Rate**
vac PREVAC 1	6	275.0°F (135.0°C)	3 minutes	16 minutes
vac PREVAC 2	2	275.0°F (135.0°C)	3 minutes	3 minutes
vac B & D TEST	1	273.0°F (134.0°C)	3 minutes: 30 seconds	0 minutes
grv GRAVITY 1	3	250.0°F (121.1°C)	30 minutes	30 minutes
grv GRAVITY 2	3	275.0°F (135.0°C)	10 minutes	30 minutes
f3 FLASH 3+	2	275.0°F (135.0°C)	3 minutes	30 seconds
f10 FLASH 10+	2	275.0°F (135.0°C)	10 minutes	30 seconds
liq LIQUIDS	1	250.0°F (121.1°C)	45 minutes	0.75 psi/minute
lk LEAK TEST	1	268.0°F (131.0°C)	3 minutes	15 minutes dry, 5 minutes dwell, 15 minutes test

STERILIZER CYCLES

PREVACUUM CYCLE

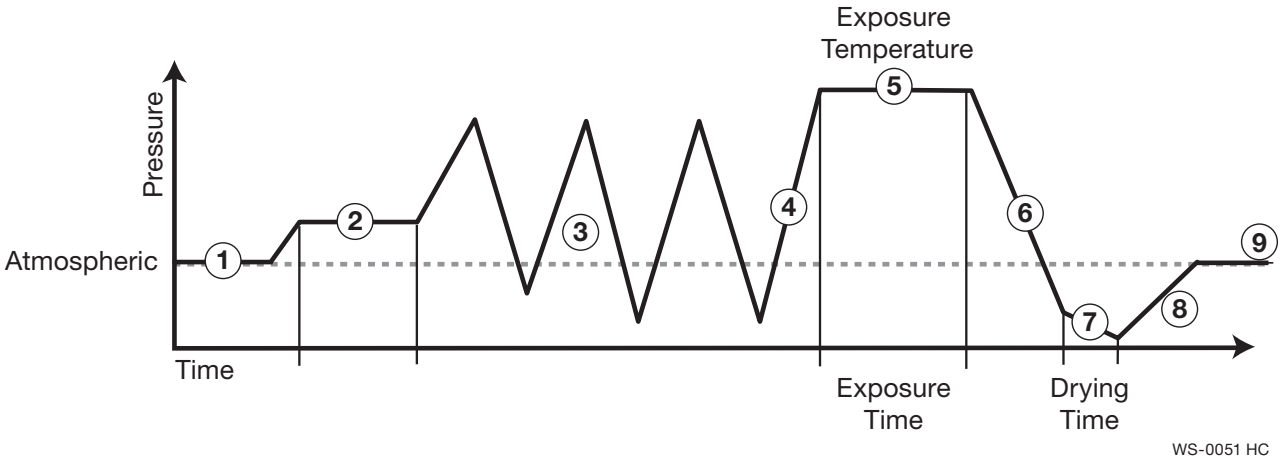
Prevacuum cycles use pressure/vacuum pulses to remove air from the load during the pre-conditioning phase. During the drying phase, vacuum in the chamber reduces the time required to dry the load.

The following adjustable parameters make up the prevacuum cycle:

- exposure temperature
- exposure time
- drying time
- blow-down duration (see “Steam Boiler Automatic Blow-down Package” on page 8–8)

The cycle phases and adjustable parameters are depicted in Figure 5–1. See Table 5–2 on page 5–5 for maximum, minimum, and factory settings for each adjustable parameter.

FIGURE 5–1. PREVACUUM CYCLE



1. Start—The start phase begins when the START button is pressed. During the start phase:
   a. The chamber door seals. If the door is not closed, an informational message (*CE DOOR OPEN* or *RE DOOR OPEN*) displays in the bottom right field of the screen.
   b. The machine counter and daily cycle counter increment.
   c. The program timer and remaining time counter start.
   d. The printer starts recording cycle information.
2. Purge—A timed phase during which steam flows through the chamber, displacing air and preheating the load.

3. Conditioning—During the conditioning phase, trapped air is removed from the load through a series of 3 positive and negative pressure/ vacuum pulses.
    - Positive pulse set point—The maximum pressure of the conditioning pulse. When this set point is reached, depressurization (negative pulse) begins.
    - Negative pulse set point—The minimum pressure of the conditioning pulse. When this set point is reached, pressurization (positive pulse) begins. For vacuum cycles, the negative pulse set point is usually below atmospheric pressure.
4. Heat-up—Heats the chamber and the load to the exposure temperature.
5. Exposure—This phase has two components:
    - Exposure Temperature (adjustable parameter)—The exposure phase begins when the chamber temperature reaches the exposure temperature set point. During the exposure phase, the selected exposure temperature is maintained for the selected exposure time.
    - Exposure Time (adjustable parameter)—Exposure is a timed phase during which saturated steam is maintained to provide the conditions necessary to achieve sterilization. If the chamber temperature falls below the required range, the exposure timer is reset to zero (0) until the chamber temperature is within the allowed range.
6. Exhaust—Exhaust rapidly reduces the chamber pressure to well below atmosphere.
7. Drying
    - Drying Time (adjustable parameter)—Drying is a timed phase during which heat and a negative pressure are used to remove moisture from the load. The actual drying time and the load size may need to be adjusted based on a variety of conditions including:
        - load composition
        - wrapping techniques
        - ambient conditions
        - quality of utilities
8. Air-in—Allows the chamber to return to atmospheric pressure from a vacuum and initiates the door unseal process.
9. Cycle Complete—Notification to the user of a completed cycle and the doors are operational.

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

TABLE 5–2. PREVACUUM CYCLE PARAMETERS

Parameter	Range	Resolution	Factory Setting	
			Prevac 1	Prevac 2
Exposure Temp (exposure temperature)	230.0°F to 275.0°F (110.0°C to 135.0°C)	0.1°	275.0°F (135.0°C)	275.0°F (135.0°C)
Exposure Time	00:01:00 to 06:00:00 (hh:mm:ss)	1 sec	00:03:00	00:03:00
Drying Time	00:00:15 to 20:00:00 (hh:mm:ss)	1 sec	00:16:00	00:03:00
BlowDown Durat (blow-down duration)	00:00:00 to 00:00:20 (hh:mm:ss)	1 sec	00:00:00	00:00:00

BOWIE AND DICK TEST

The Bowie and Dick test cycle is a prevacuum cycle that uses pressure/vacuum pulses to remove air from the chamber and the test pack.

The purpose of the Bowie and Dick test cycle is to evaluate the efficacy of air removal within the sterilizer. Typically, the test cycle exposure time should never exceed 4 minutes at 273.0°F (134.0°C).

The following adjustable parameters make up the Bowie and Dick test cycle:

- exposure temperature
- exposure time
- drying time
- blow-down duration (See “Steam Boiler Automatic Blow-down Package” on page 8–8.)

See Table 5–3 for maximum, minimum, and factory settings for each adjustable parameter.

TABLE 5–3. BOWIE AND DICK TEST CYCLE PARAMETERS

Parameter	Range	Resolution	Factory Setting
Exposure Temp (exposure temperature)	230.0°F to 275.0°F (110.0°C TO 135.0°C)	0.1°	273.0°F (134.0°C)
Exposure Time	00:01:00 to 06:00:00 (hh:mm:ss)	1 sec	00:03:30
Drying Time	00:00:00 to 12:00:00 (hh:mm:ss)	1 sec	00:00:00
BlowDown Durat (blow-down duration)	00:00:00 to 00:00:20 (hh:mm:ss)	1 sec	00:00:00

NOTE

The Bowie and Dick Test cycle parameters are adjustable with password access and can be overwritten. If the cycle settings are changed, reconfigure the cycle to the factory settings listed in Table 5–3.

GRAVITY CYCLE

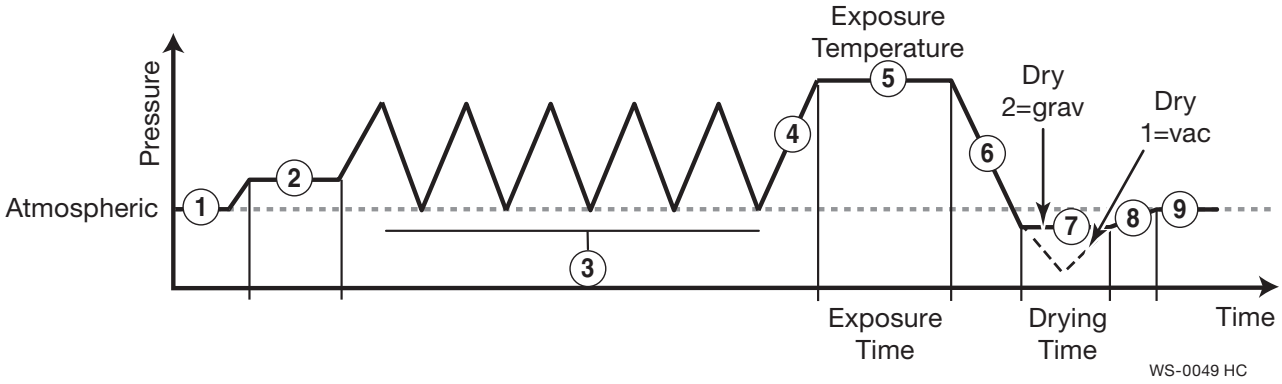
Gravity cycles use the gravity (downward displacement) method of air removal. The conditioning phase of these cycles includes pressure pulses to aid in air removal.

The following adjustable parameters make up the gravity cycle:

- exposure temperature
- exposure time
- drying method, vacuum or gravity
- drying time
- blow-down duration (See “Steam Boiler Automatic Blow-down Package” on page 8–8.)

The cycle phases and adjustable parameters are depicted in Figure 5–2. See Table 5–4 on page 5–9 for maximum, minimum, and factory settings for each adjustable parameter.

FIGURE 5–2. GRAVITY CYCLE



1. Start—The start phase begins when the START button is pressed. During the start phase:
   a. The chamber door seals. If the door is not closed, an informational message (*CE DOOR OPEN* or *RE DOOR OPEN*) displays in the bottom right field of the screen.
   b. The machine counter and daily cycle counter increment.
   c. The program timer and remaining time counter start.
   d. The printer starts recording cycle information.
2. Purge—A timed phase during which steam flows through the chamber, displacing air and preheating the load.
3. Conditioning—During the conditioning phase, trapped air is removed from the load through a series of 5 positive pressure pulses.

4. Heat-up—Heats the chamber and the load to the exposure temperature.
5. Exposure—This phase has two components:
   - Exposure Temperature (adjustable parameter)—The exposure phase begins when the chamber temperature reaches the exposure temperature set point. During the exposure phase, the selected exposure temperature is maintained for the selected exposure time.
   - Exposure Time (adjustable parameter)—Exposure is a timed phase during which saturated steam is maintained to provide the conditions necessary to achieve sterilization. If the chamber temperature falls below the required range, the exposure timer is reset to zero (0) until the chamber temperature is within the allowed range.
6. Exhaust—Exhaust rapidly reduces the chamber pressure to atmospheric or below.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: The gravity cycle drying time may be reduced by selecting the vacuum (1=vac) drying phase. Do not select the vacuum drying phase (1=vac) if the load is vacuum sensitive.

7. Drying
   - Drying Time (adjustable parameter)—A timed phase during which heat and a negative pressure (depending on dry type) are used to remove moisture from the load. The actual drying time and load size may need to be adjusted based on a variety of conditions including:
     - load composition
     - wrapping techniques
     - ambient conditions
     - quality of utilities
   - Dry 1=vac 2=grav (adjustable parameter)—The sterilizer has two user selectable options for drying method: gravity (2=grav) and vacuum (1=vac). Selecting vacuum reduces the drying time and is used with loads that are not vacuum sensitive.
8. Air-in—Allows the chamber to return to atmospheric pressure from a vacuum and initiates the door unseal process.
9. Cycle Complete—Notification to the user of a completed cycle and the doors are operational.

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

TABLE 5–4. GRAVITY CYCLE PARAMETERS

Parameter	Range	Resolution	Factory Setting	
			Gravity 1	Gravity 2
Exposure Temp (exposure temperature)	230.0°F to 275.0°F (110.0°C to 135.0°C)	0.1°	250.0°F (121.1°C)	275.0°F (135.0°C)
Exposure Time	00:01:00 to 06:00:00 (hh:mm:ss)	1 sec	00:30:00	00:10:00
Dry 1=vac 2=grav (drying method, vacuum or gravity)	00001 or 00002 (vacuum or gravity)	—	00002	00002
Drying Time	00:00:15 to 12:00:00 (hh:mm:ss)	1 sec	00:30:00	00:30:00
BlowDown Durat (blow-down duration)	00:00:00 to 00:00:20 (hh:mm:ss)	1 sec	00:00:00	00:00:00

FLASH 3+

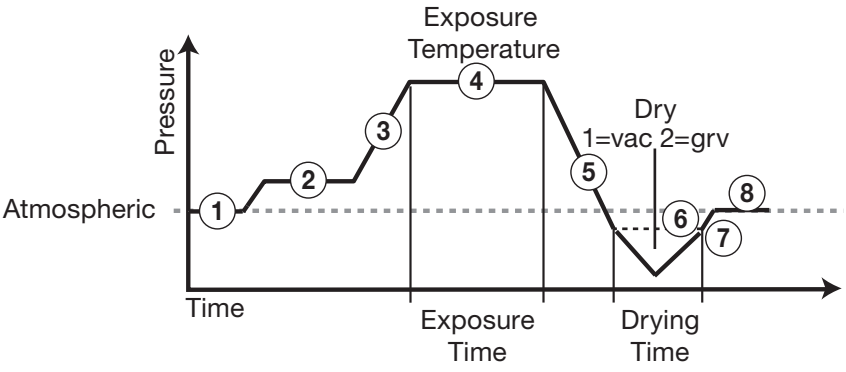
Flash 3+ cycles use the gravity (downward displacement) method of air removal. The conditioning phase of these cycles does not include pressure pulses to aid in air removal.

The following adjustable parameters make up the flash 3+ cycle:

- exposure temperature
- exposure time
- drying method (vacuum or gravity)
- drying time
- blow-down duration (See “Steam Boiler Automatic Blow-down Package” on page 8–8.)

The cycle phases and adjustable parameters are depicted in Figure 5–3. See Table 5–5 on page 5–12 for maximum, minimum, and factory settings for each adjustable parameter.

FIGURE 5–3. FLASH 3+ CYCLE



1. Start—The start phase begins when the START button is pressed. During the start phase:
   a. The chamber door seals. If the door is not closed, an informational message (CE DOOR OPEN or RE DOOR OPEN) displays in the bottom right field of the screen.
   b. The machine counter and daily cycle counter increment.
   c. The program timer and remaining time counter start.
   d. The printer starts recording cycle information.
2. Purge—A timed phase during which steam flows through the chamber, displacing air and preheating the load.
3. Heat-up—Heats the chamber and the load to the exposure temperature.

4. Exposure—This phase has two components:
    - Exposure Temperature (adjustable parameter)—The exposure phase begins when the chamber temperature reaches the exposure temperature set point. During the exposure phase, the selected exposure temperature is maintained for the selected exposure time.
    - Exposure Time (adjustable parameter)—Exposure is a timed phase during which saturated steam is maintained to provide the conditions necessary to achieve sterilization. If the chamber temperature falls below the required range, the exposure timer is reset to zero (0) until the chamber temperature is within the allowed range.
5. Exhaust—Exhaust rapidly reduces the chamber pressure to atmospheric or below.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Flash 3+ cycle drying time may be reduced by selecting the vacuum (1=vac) drying phase. Do not select the vacuum drying phase (1=vac) if the load is vacuum sensitive.

6. Drying
    - Drying Time (adjustable parameter)—A timed phase during which heat and a negative pressure (depending on dry type) are used to remove moisture from the load. The actual drying time and load size may need to be adjusted based on a variety of conditions including:
        - load composition
        - wrapping techniques
        - ambient conditions
        - quality of utilities
    - Dry 1=vac 2=grav (adjustable parameter)—The sterilizer has two user selectable options for drying method: gravity (2=grav) and vacuum (1=vac). Selecting vacuum reduces the drying time and is used with loads that are not vacuum sensitive.
7. Air-in—Allows the chamber to return to atmospheric pressure from a vacuum and initiates the door unseal process.
8. Cycle Complete—Notification to the user of a completed cycle and the doors are operational.

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

RISK OF NON-STERILE DEVICE: The recommended minimum exposure time and temperature for unwrapped non-porous flash cycle loads (e.g., metal instruments) is 3 minutes at 275°F (135°C).

BURN HAZARD: Flash sterilized unwrapped instruments could still be hot at the end of the cycle. These instruments could burn the patient if used immediately in surgical procedures. Use personal protective equipment when removing these items from the sterilizer and allow sufficient time for them to cool before using them in surgical procedures.

TABLE 5–5. FLASH 3+ CYCLE PARAMETERS

Parameter	Range	Resolution	Factory Setting
Exposure Temp (exposure temperature)	230.0°F to 275.0°F (110.0°C to 135.0°C)	0.1°	275.0°F (135.0°C)
Exposure Time	00:03:00 to 06:00:00 (hh:mm:ss)	1 sec	00:03:00
Dry 1=vac 2=grav (drying method, vacuum or gravity)	00001 or 00002 (vacuum or gravity)	—	00001
Drying Time	00:00:15 to 12:00:00 (hh:mm:ss)	1 sec	00:00:30
BlowDown Durat (blow-down duration)	00:00:00 to 00:00:20 (hh:mm:ss)	1 sec	00:00:00

FLASH 10+

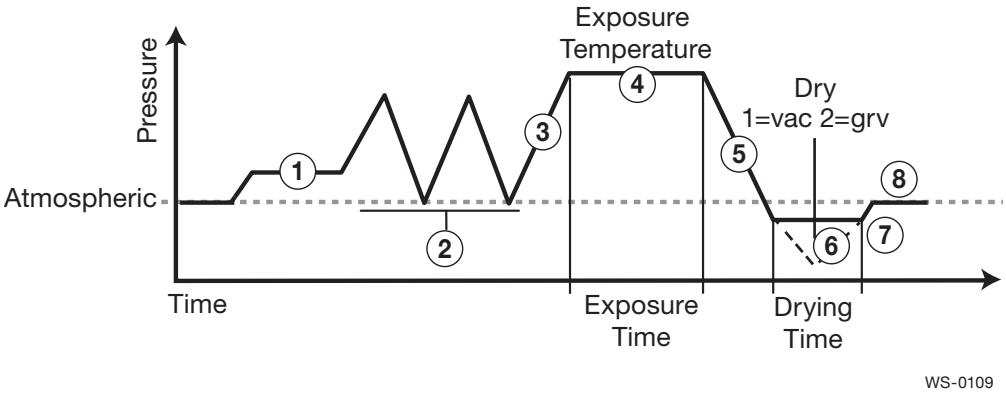
Flash 10+ cycles use the gravity method (downward displacement) of air removal. The conditioning phase of these cycles includes two pressure pulses to aid in air removal.

The following adjustable parameters make up the flash 10+ cycle:

- exposure temperature
- exposure time
- drying method (vacuum or gravity)
- drying time
- blow-down duration (See “Steam Boiler Automatic Blow-down Package” on page 8–8.)

The cycle phases and adjustable parameters are depicted in Figure 5–4. See Table 5–6 on page 5–15 for maximum, minimum, and factory settings for each adjustable parameter.

FIGURE 5–4. FLASH 10+ CYCLE



1. Start—The start phase begins when the START button is pressed. During the start phase:
   a. The chamber door seals. If the door is not closed, an informational message (CE DOOR OPEN or RE DOOR OPEN) displays in the bottom right field of the screen.
   b. The machine counter and daily cycle counter increment.
   c. The program timer and remaining time counter start.
   d. The printer starts recording cycle information.
2. Conditioning—During the conditioning phase, trapped air is removed from the load through a series of 5 positive pressure pulses.
3. Heat-up—Heats the chamber and the load to the exposure temperature.

4. Exposure—This phase has two components:
    - Exposure Temperature (adjustable parameter)—The exposure phase begins when the chamber temperature reaches the exposure temperature set point. During the exposure phase, the selected exposure temperature is maintained for the selected exposure time.
    - Exposure Time (adjustable parameter)—Exposure is a timed phase during which saturated steam is maintained to provide the conditions necessary to achieve sterilization. If the chamber temperature falls below the required range, the exposure timer is reset to zero (0) until the chamber temperature is within the allowed range.
5. Exhaust—Exhaust rapidly reduces the chamber pressure to atmospheric or below.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Flash 10+ cycle drying time may be reduced by selecting the vacuum (1=vac) drying phase. Do not select the vacuum drying phase (1=vac) if the load is vacuum sensitive.

6. Drying
    - Drying Time (adjustable parameter)—A timed phase during which heat and a negative pressure (depending on dry type) are used to remove moisture from the load. The actual drying time and load size may need to be adjusted based on a variety of conditions including:
        - load composition
        - wrapping techniques
        - ambient conditions
        - quality of utilities
    - Dry 1=vac 2=grav (adjustable parameter)—The sterilizer has two user selectable options for drying method: gravity (2=grav) and vacuum (1=vac). Selecting vacuum reduces drying time and is used with loads that are not vacuum sensitive.
7. Air-in—Allows the chamber to return to atmospheric pressure from a vacuum and initiates the door unseal process.
8. Cycle Complete—Notification to the user of a completed cycle and the doors are operational.

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

BURN HAZARD: Flash sterilized unwrapped instruments could still be hot at the end of the cycle. These instruments could burn the patient if used immediately in surgical procedures. Use personal protective equipment when removing these items from the sterilizer and allow sufficient time for them to cool before using them in surgical procedures.

TABLE 5–6. FLASH 10+ CYCLE PARAMETERS

Parameter	Range	Resolution	Factory Setting
Exposure Temp (exposure temperature)	230.0°F to 275.0°F (110.0°C to 135.0°C)	0.1°	275.0°F (135.0°C)
Exposure Time	00:10:00 to 06:00:00 (hh:mm:ss)	1 sec	00:10:00
Dry 1=vac 2=grav (drying method, vacuum or gravity)	00001 or 00002 (vacuum or gravity)	—	00001
Drying Time	00:00:15 to 12:00:00 (hh:mm:ss)	1 sec	00:00:30
BlowDown Durat (blow-down duration)	00:00:00 to 00:00:20 (hh:mm:ss)	1 sec	00:00:00

LIQUIDS CYCLE

Liquids cycles use the gravity method of air removal. The liquid exhaust phase is computer-controlled.

WARNING

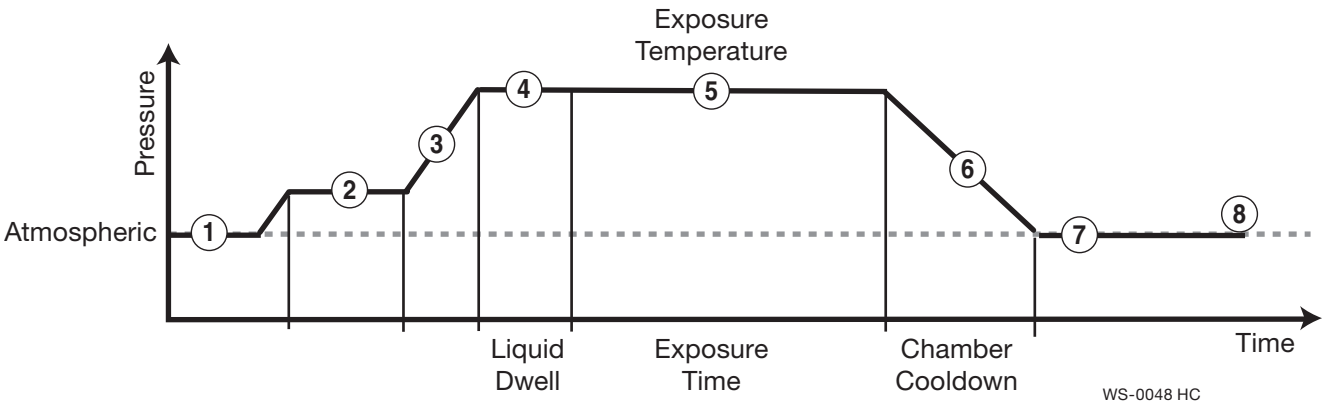
RISK OF INFECTION: The liquids cycle is NOT intended for the sterilization of liquids intended for direct patient contact.

The following adjustable parameters make up the liquids cycle:

- exposure temperature
- liquid dwell time
- exposure time
- chamber cooldown (exhaust rate)
- blow-down duration (See “Steam Boiler Automatic Blow-down Package” on page 8–8.)

The cycle phases and adjustable parameters are depicted in Figure 5–5. See Table 5–7 on page 5–18 for maximum, minimum, and factory settings for each adjustable parameter.

FIGURE 5–5. LIQUIDS CYCLE



1. Start—The start phase begins when the START button is pressed. During the start phase:
   a. The chamber door seals. If the door is not closed, an informational message (*CE DOOR OPEN* or *RE DOOR OPEN*) displays in the bottom right field of the screen.
   b. The machine counter and daily cycle counter increment.
   c. The program timer and remaining time counter start.
   d. The printer starts recording cycle information.
2. Purge—A timed phase during which steam flows through the chamber, displacing air and preheating the load.

3. Liq Heat-up—Heats the chamber and the load to the exposure temperature.
4. Liq Dwell (adjustable parameter)—A timed phase during which the load heats up to the chamber temperature. When the dwell timer expires, exposure begins.
5. Liq Exposure—This phase has two components:
    - Exposure Temperature (adjustable parameter)—The exposure phase begins when the chamber temperature reaches the exposure temperature set point. During the exposure phase, the selected exposure temperature is maintained for the selected exposure time.
    - Exposure Time (adjustable parameter)—Exposure is a timed phase during which saturated steam is maintained to provide the conditions necessary to achieve sterilization. If the chamber temperature falls below the required range, the exposure timer is reset to zero (0) until the chamber temperature is within the allowed range.
6. Liq Exhaust (chamber cooldown, adjustable parameter)—During the liquid exhaust phase, the chamber pressure is slowly reduced until the chamber temperature is below 95°C (203°F). The sterilizer controls monitor the chamber pressure and control the chamber drain valve so the chamber pressure is released at a steady rate. This slow exhaust reduces the possibility of liquids boiling over and containers from breaking, and ensures the load is cool enough to remove at the end of the cycle.
7. Air-in—Allows the chamber to return to atmospheric pressure from a vacuum and initiates the door unseal process.
8. Cycle Complete—Notification to the user of a completed cycle and the doors are operational.

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

TABLE 5–7. LIQUIDS CYCLE PARAMETERS

Parameter	Range	Resolution	Factory Setting
Exposure Temp (exposure temperature)	219.2°F to 275.0°F (104.0°C to 135.0°C)	0.1°	250.0°F (121.1°C)
Liquid Dwell	00:00:00 to 00:30:00 (hh:mm:ss)	1 sec	00:08:00
Exposure Time	00:01:00 to 06:00:00 (hh:mm:ss)	1 sec	00:45:00
Chamber Cooldown (liquid exhaust rate)	0.00 to 5.00	0.01 psia/min	0.75
BlowDown Durat (blow-down duration)	00:00:00 to 00:00:20 (hh:mm:ss)	1 sec	00:00:00

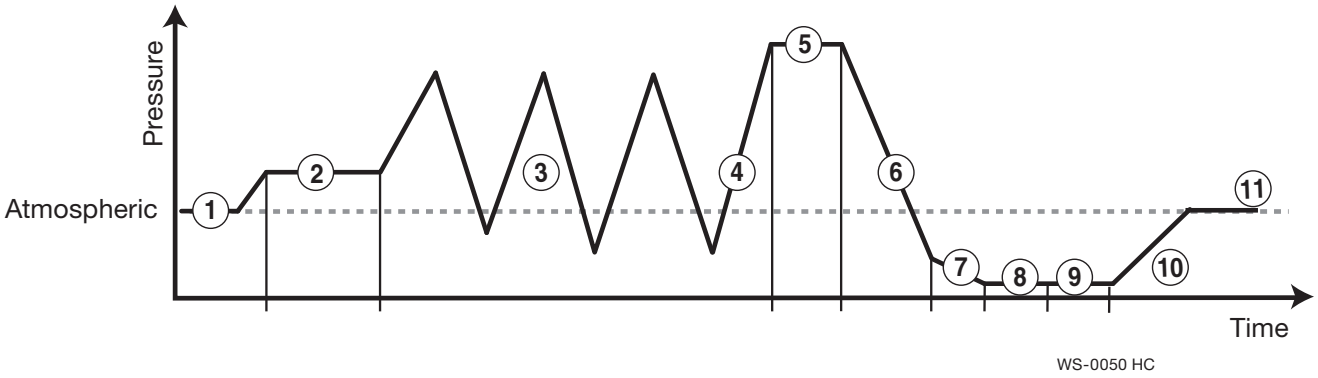
VACUUM LEAK TEST

The vacuum leak test cycle includes a timed phase during which pressure is continually monitored to check vessel integrity.

The vacuum leak test cycle parameters are not adjustable, except for blow-down duration. (See “Steam Boiler Automatic Blow-down Package” on page 8–8.)

The cycle phases are depicted in Figure 5–6. See Table 5–8 on page 5–20 for range, resolution, and factory settings for each parameter.

FIGURE 5–6. VACUUM LEAK TEST CYCLE



1. Start—The start phase begins when the START button is pressed. During the start phase:
   a. The chamber door seals. If the door is not closed, an informational message (*CE DOOR OPEN* or *RE DOOR OPEN*) displays in the bottom right field of the screen.
   b. The machine counter and daily cycle counter increment.
   c. The program timer and remaining time counter start.
   d. The printer starts recording cycle information.
2. Purge—Purge is a timed phase during which steam flows through the chamber, displacing air and preheating the load.
3. Conditioning—During the conditioning phase, trapped air is removed from the load through a series of positive and negative pressure/vacuum pulses.
4. Heat-up—Heats the chamber and the load to the exposure temperature.
5. Exposure—Exposure is a timed phase during which saturated steam is maintained to provide the conditions necessary to achieve sterilization. If the chamber temperature falls below the required range, the exposure timer is suspended until the chamber temperature re-enters the allowed range.
6. Exhaust—Exhaust rapidly reduces the chamber pressure to well below atmosphere.

7. Drying—Drying is a timed phase during which heat and a negative pressure are used to remove moisture from the chamber.
8. Equalization—Vacuum is maintained for a specified time.
9. Leak Test—Vacuum, at the end of the timed phase, is compared with vacuum at the start of the phase. The test fails if the rate of vacuum loss exceeds a specified value.
10. Air-in—Allows the chamber to return to atmospheric pressure from a vacuum and initiates the door unseal process.
11. Cycle Complete—Notification to the user of a completed cycle and the doors are operational.

TABLE 5–8. VACUUM LEAK TEST CYCLE PARAMETERS

Parameter	Range	Resolution	Factory Setting
Exposure Temp (exposure temperature)	Not Adjustable	—	268.0°F (131.1°C)
Exposure Time			3 min
Dry Time			15 min
Dwell Time			5 min
Test Time			15 min
BlowDown Durat (blow-down duration)	00:00:00 to 00:00:20 (hh:mm:ss)	1 sec	00:00:00

SECTION 6 TROUBLESHOOTING GUIDE

DISPLAY MESSAGES

The display window is the interface between the operator and the sterilizer. Whenever there is a failure or fault condition, or a message that may require intervention, the message displays on the bottom of the display window, above the softkeys.

This section includes information regarding:

Topic	Page
Visual Alarms	6–2
Failure Conditions	6–3
Fault Conditions	6–4
Informational Messages	6–5
Troubleshooting	6–7
Diagnostic Messages	6–8

DIAGNOSTIC MESSAGE TYPES

Diagnostic messages can be placed into three groups:

- failure conditions
- fault conditions
- informational messages

NOTE

ALWAYS check the printout to determine whether a cycle completed successfully or the cycle aborted. See "End of Cycle Routine" on page 4–25 and Table 4–2 on page 4–26.

WARNING

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

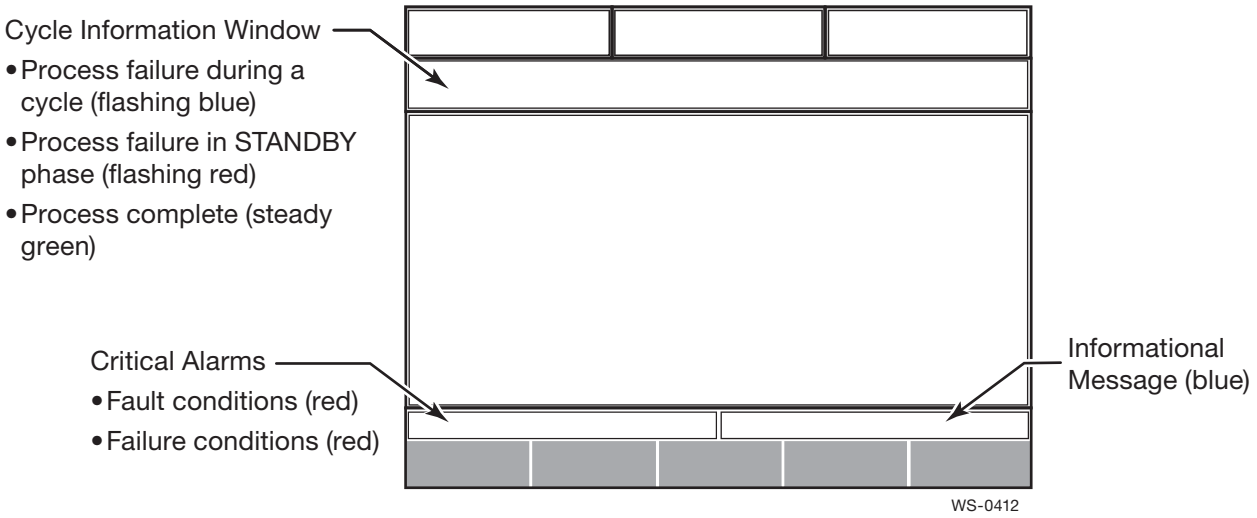
WARNING

RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

VISUAL ALARMS

The cycle information window indicates the process failure and process complete conditions.

FIGURE 6–1. CYCLE INFORMATION WINDOW


Cycle Information Window
• Process failure during a cycle (flashing blue)
• Process failure in STANDBY phase (flashing red)
• Process complete (steady green)
Critical Alarms
• Fault conditions (red)
• Failure conditions (red)
Informational Message (blue)
WS-0412

Process Failure Indicator—When a process failure occurs during a cycle, the cycle information window changes to flashing blue. The cycle moves automatically to STANDBY, and the cycle information window changes to flashing blue and continues flashing until the alarm is cleared.

Process Complete Indicator—When the cycle is complete, the cycle information window changes to green. The cycle information window returns to normal when the door is opened.

FAILURE CONDITIONS

Failure conditions cause the sterilizer to abort the cycle automatically.

Failure conditions (e.g., *ABORT HEAT-UP*, *JACKET OVER TEMP*) are indicated by the process failure LED flashing and a pulsing alarm tone. Exceptions are noted in Table 6–7 on page 6–8.

When a failure condition is present, the following sequence occurs:

- The controls cancel the cycle automatically (cycle abort).
- A failure message displays in the critical alarms portion of the display window, located on the bottom left above the softkeys (see Figure 6–2 on page 6–3).
- A pulsing alarm tone sounds.
- The name of the current in-cycle phase (e.g., HEAT-UP) appears in the cycle information portion of the display window, below the cycle name.
  - in-cycle phase (flashing blue)
  - STANDBY phase (flashing red)
- The error message prints and appends to the error log.

Once the sterilizer is in STANDBY, the cycle information displays a flashing red background, and the door will NOT unseal until CLEAR ALARM is pressed to acknowledge the abort condition.

WARNING

POSSIBILITY OF INJURY: If a WATER IN DRAIN message displays, DO NOT operate the chamber door. Hot water in the chamber may spill if the door is opened. Wait until the message clears before attempting to open the door.

FIGURE 6–2. EXAMPLE OF A FAILURE CONDITION

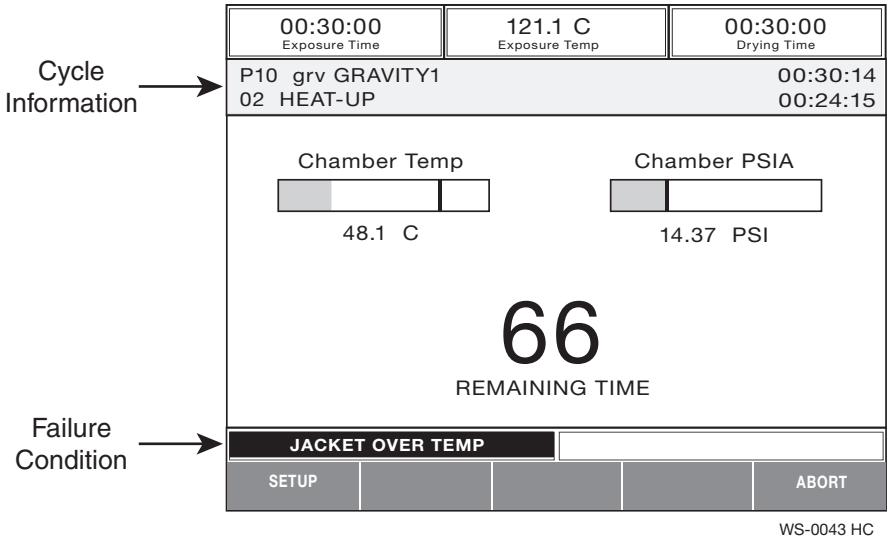


TABLE 6–1. FAILURE CONDITION MESSAGES

ABORT - AIR REMOVAL	DI 00–15 COM ERR (digital inputs)
ABORT - CNTRLS OFF	DO 00–23 COM ERR (digital outputs)
ABORT - DOOR SW	DRAIN RTD ERROR
ABORT - EXH SLOWED	JACKET OVER TEMP
ABORT - HEAT UP	JKT RTD ERROR
ABORT - HIGH TEMP	LEAK TEST FAIL
ABORT - LIQexh SLOW	POWER FAILED
ABORT - SLOW STEAM	PRESS ERROR
CHAM RTD ERROR	WATER IN DRAIN

WARNING

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

For information regarding the determination of a completed or aborted cycle, see Table 4–2 on page 4–26.

FAULT CONDITIONS

Fault conditions (e.g., *DOOR SWITCH FAIL*, *PRESS IN CHAMBER*) are less severe than process failures. Fault conditions do NOT cause the system to abort.

Fault conditions are usually indicated by a steady alarm tone. Exceptions are noted in Table 6–7 on page 6–8.

All in-cycle fault conditions display in the critical alarms field of the cycle information window (bottom left). The door fault conditions display in the informational messages field (bottom right). See Figure 6–1 on page 6–2.

Pressing CLEAR ALARM extinguishes only the audible alarm and door fault messages. All other messages clear once the fault condition is corrected.

The door fault conditions are listed in the following table:

TABLE 6–2. DOOR FAULT CONDITION MESSAGES

CE NOT CLOSED	DOORS NOT SEALED
CE NOT OPENED	DOORS NOT UNSLD
CE NOT SEALED	RE NOT CLOSED
CE NOT UNSEALED	RE NOT OPENED

The other fault conditions are listed in the following table:

TABLE 6–3. OTHER FAULT CONDITION MESSAGES

AIR-IN SLOW	DWELL TEMP LOW (liquids cycle only)
BATTERY LOW	OBSTRUCT SW FAIL
DOOR OBSTRUCTED	PRESS IN CHAMBER
DOOR SWITCH FAIL	RESET-TEMP LOW

NOTE
In some instances, the message clears once the fault condition is corrected and acknowledged by the sterilizer controls.

WARNING
RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

For information regarding the determination of a completed or aborted cycle, see Table 4–2 on page 4–26.

INFORMATIONAL MESSAGES

Informational messages alert the operator to pertinent conditions. These messages display in the informational messages field (bottom right, above the softkeys) of the display window. See Figure 6–1 on page 6–2.

Informational messages clear when the condition is corrected (e.g., *WAIT FOR JACKET*) or after a time period (e.g., *CYCLE ADVANCED*, *PREPARING GASKET*).

FIGURE 6–3. EXAMPLE OF AN INFORMATIONAL MESSAGE

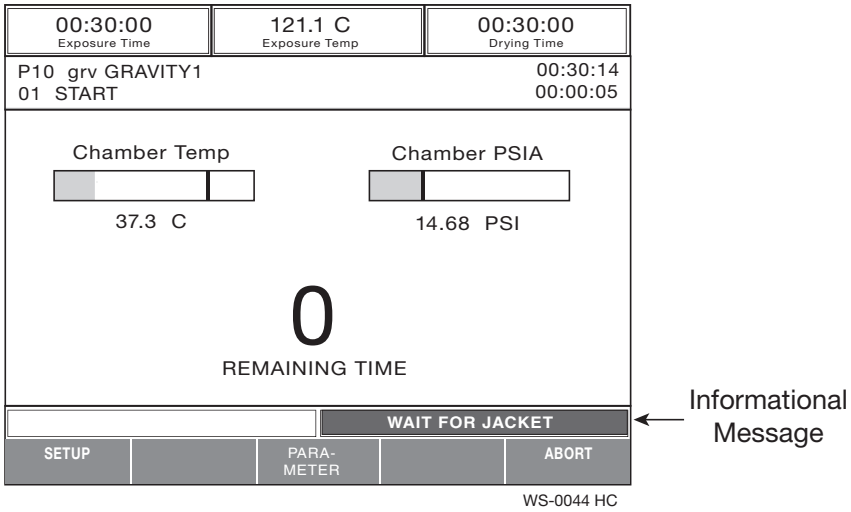


TABLE 6–4. INFORMATIONAL MESSAGES

CE DOOR OPEN	RE DOOR OPEN
HEATING GASKET	SERVICE MODE
INVALID CONFIG	UTILITY SHUTDOWN
MANUAL MODE	WAIT FOR JACKET
PREPARING GASKET	—

TABLE 6–5. INFORMATIONAL MESSAGES INDICATING POSSIBLY INCOMPLETE CYCLES

ABORT MANUAL	LOW CYCLE VALUES (Appears before a cycle starts)
CYCLE ADVANCED	

WARNING

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

For information regarding the determination of a completed or aborted cycle, see Table 4–2 on page 4–26.

TROUBLESHOOTING

Failure and fault conditions can sometimes be corrected by the operator, supervisor, facility engineer, or maintenance personnel. Table 6–6 and Table 6–7 on page 6–8 provide corrective actions that can be performed before calling qualified service personnel. If the condition still exists after performing the routine maintenance items in the troubleshooting checklist, call service.

NOTE

Specifications for the steam and water supplies are listed on the roughing-in drawing. The roughing-in drawing for this sterilizer can be found in the Installation Manual (61301607027).

TABLE 6–6. TROUBLESHOOTING CHECKLIST

Check	What To Do
Is the chamber drain screen clogged?	Clean the sediment screen. See “Cleaning the Sediment Screen” on page 7–2.
Is the door gasket worn or damaged?	Replace the door gasket. Call service.
Is the steam supply turned on?	If the sterilizer has a utilities control package, check the programmable timer’s ON/OFF schedule. See “Setting Up the Utilities On and Off Times” on page B–35.
Is the steam supply pressure adequate?	Adjust the steam pressure to meet specification on the roughing-in drawing. See the *Installation Manual (61301607027)*.
Is the water supply turned on?	Check water shutoff valves.
Is the water supply pressure adequate?	Adjust the water pressure to meet specification on the roughing-in drawing. See the *Installation Manual (61301607027)*.
Is the steam supply strainer clogged?	Clean the strainer screen. Call service.
Is the water supply strainer clogged?	Clean the strainer screen. Call service.
Is the air filter clogged?	Replace the air filter. Call service.

DIAGNOSTIC MESSAGES

To silence the alarm, press CLEAR ALARM while in cycle.

To clear all failure and fault indicators, press CLEAR ALARM while in standby (assuming the controls are no longer reading the failure or fault).

WARNING

RISK OF NON-STERILE DEVICE: If the PROCESS FAILURE indicator is flashing, the cycle must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).

TABLE 6–7. FAILURE AND FAULT CONDITION MESSAGES

Message	What Happened	What To Do
ABORT - AIR REMOVAL (pulsing alarm)	The negative pulse subphase exceeded the time limit. PROCESS FAILURE—AUTOMATIC ABORT	Check the following: • Water supply turned on? • Water supply pressure adequate? • Door gasket damaged? • Chamber drain screen clogged? • Water supply strainer clogged? If the above items are OK and the message occurs again, call service.
ABORT - CNTRLS OFF (pulsing alarm)	The controls were turned OFF or ON during the cycle by pressing the ON/OFF button.	No action required.
	OR, there is an intermittent hardware issue.	Call service.
ABORT - DOOR SW (pulsing alarm)	The door switch or chamber pressure switch failed while in cycle. (The door is not closed or not sealed.) PROCESS FAILURE—AUTOMATIC ABORT	Stop processing and call service.

TABLE 6–7. FAILURE AND FAULT CONDITION MESSAGES

Message	What Happened	What To Do
ABORT - EXH SLOWED (pulsing alarm)	The exhaust phase exceeded the time limit. PROCESS FAILURE—AUTOMATIC ABORT	Check the following: • Chamber drain screen clogged? • Water supply pressure adequate? • Door gasket damaged? If the above items are OK and the message occurs again, stop processing and call service.
ABORT - HEAT-UP (pulsing alarm)	The heat-up phase exceeded the time limit. PROCESS FAILURE—AUTOMATIC ABORT	Check the following: • Steam supply turned on? • Steam supply adequate? • Steam supply strainer clogged? • Oversized load? If the above items are OK and the message occurs again, stop processing and call service.
ABORT - HIGH TEMP (pulsing alarm)	The temperature during the exposure phase exceeded the limit. PROCESS FAILURE—AUTOMATIC ABORT	Check the following: • Door gasket damaged? • Dynamic steam pressure adequate? • Steam to chamber valve closing? If the message occurs again, stop processing and call service.
ABORT - LIQexh SLOW (pulsing alarm)	The exhaust phase of a liquids cycle exceeded 4 hours. PROCESS FAILURE—AUTOMATIC ABORT	Check the following: • Chamber drain screen clogged? • Water supply pressure adequate? • Door gasket damaged? If the above items are OK and the message occurs again, stop processing and call service.
ABORT - SLOW STEAM (pulsing alarm)	The positive pulse subphase exceeded the time limit. PROCESS FAILURE—AUTOMATIC ABORT	Check the following: • Steam supply on? • Steam supply pressure adequate? • Steam supply strainer clogged? If above items are OK and the message occurs again, call service.
AIR-IN SLOW (pulsing alarm)	The air-in phase exceeded the time limit. PROCESS FAILURE—The sterilizer may not be able to complete the cycle.	Replace the air filter. If the message occurs again, call service.
BATTERY LOW (no alarm)	The controls detected a low battery condition.	Call service.

TABLE 6–7. FAILURE AND FAULT CONDITION MESSAGES

Message	What Happened	What To Do
CE NOT CLOSED (steady alarm)	The control end door did not close during the CE closing phase. The controls returned to standby or cycle complete mode.	Check for obstruction. If the message occurs again, call service.
CE NOT OPENED (steady alarm)	The control end door did not open during the CE opening phase. The controls returned to standby or cycle complete mode.	Check for obstruction. Unseal the door again using the softkey. See Table 3–3, “Softkey Assignments” on page 3–11. If the message occurs again, call service.
CE NOT SEALED (steady alarm)	Single door units—The control end door did not seal during the CE door sealing phase. The controls returned to standby or cycle complete mode.	Check the following: • Door gasket damaged? If so, replace. • Steam supply on? • Steam supply pressure adequate? • Steam supply strainer clogged? If above items are OK and the message occurs again, call service.
CE NOT UNSEALED (steady alarm)	Single door units—The control end door did not unseal during the CE door unsealing phase. The controls returned to standby or cycle complete mode.	Check the water supply pressure. If the water pressure is adequate and the message occurs again, call service. To remove the load, unseal the door manually. See “Opening the Door Manually” on page 4–40.
CHAM RTD ERROR (pulsing alarm)	Communication with the chamber RTD malfunctioned.	Wait for the abort to finish if the system is in cycle. If the message does not clear or occurs again, call service.
DI 00-07 COM ERR (pulsing alarm)	Communication with (Digital Input) DI 0 module malfunctioned.	Wait for the abort to finish if the system is in cycle. If the message does not clear or occurs again, call service.
DI 08-15 COM ERR (pulsing alarm)	Communication with (Digital Input) DI 1 module malfunctioned.	
DO 00-07 COM ERR (pulsing alarm)	Communication with (Digital Output) DO 0 module malfunctioned.	
DO 08-15 COM ERR (pulsing alarm)	Communication with (Digital Output) DO 1 module malfunctioned.	
DO 16-23 COM ERR (pulsing alarm)	Communication with (Digital Output) DO 2 module malfunctioned.	

TABLE 6–7. FAILURE AND FAULT CONDITION MESSAGES

Message	What Happened	What To Do
DOOR OBSTRUCTED	The door obstruction switch detected an obstruction while in the CE or RE closing phases and did not close. Communication with the door obstruction switch has malfunctioned.	Check for obstruction. Clear the message; attempt to close the door again. If the message occurs again, call service.
DOOR SWITCH FAIL (steady alarm)	The door switch failed while in standby. (The door is sealed but not closed.)	Check for obstruction. If the message occurs again, call service.
DOORS NOT SEALED (steady alarm)	Double door units—The door gasket did not seal during the door sealing phase. The controls returned to standby or cycle complete mode.	Check the following: • Door gasket damaged? If so, replace. • Steam supply on? • Steam supply pressure adequate? • Steam supply strainer clogged? If above items are OK and the message occurs again, call service.
DOORS NOT UNSLD (steady alarm)	Double door units—The door gasket did not unseal during the door unsealing phase. The controls returned to standby or cycle complete mode.	Check water supply pressure. If water pressure is adequate and the message occurs again, call service. To remove load, unseal door manually. See “Opening the Door Manually” on page 4–40.
DRAIN RTD ERROR	Communication with the drain RTD malfunctioned.	Wait for the abort to finish if the system is in cycle. If the message does not clear or occurs again, call service.
DWELL TEMP LOW (steady alarm)	Liquids cycle—The chamber temperature is less than or equal to the set point minus 1.1°C (1.8°F).	Check the steam supply. Check the chamber drain screen. If the steam supply is adequate and the chamber drain screen is clear, and the message occurs again, call service.
JACKET OVER TEMP (pulsing alarm)	The jacket temperature exceeded the limit. PROCESS FAILURE—AUTOMATIC ABORT	Shut off the steam supply and call service.
JKT RTD ERROR (pulsing alarm)	Communication with the jacket RTD malfunctioned.	Wait for the abort to finish if the system is in cycle. If the message does not clear or occurs again, call service.
LEAK TEST FAIL (steady alarm)	The vacuum leak test failed.	Check the door gasket and replace if damaged. If the message occurs again, call service.

TABLE 6–7. FAILURE AND FAULT CONDITION MESSAGES

Message	What Happened	What To Do
OBSTRUCT SW FAIL	Communication with the door obstruction switch malfunctioned.	If the message occurs again, call service.
POWER FAILED (pulsing alarm)	***WARNING*** *RISK OF NON-STERILE DEVICE: If the sterilizer cancels the cycle due to a power interruption, the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).*	
	Power was interrupted for more than one minute. PROCESS FAILURE—AUTOMATIC ABORT	Acknowledge the alarm (press CLEAR ALARM).
PRESS ERROR (pulsing alarm)	Communication with the pressure transducer malfunctioned.	Wait for the abort to finish if the system is in cycle. If the message does not clear or occurs again, call service.
PRESS IN CHAMBER (steady alarm)	The chamber is not within 2 psi of atmospheric pressure while in standby or cycle complete mode.	Check the CHAMBER pressure gauge to verify the problem. Wait for the pressure to decrease or increase to zero, then: • Attempt to open and close the door. • Or, when the STANDBY message displays, attempt to open the door. If the message occurs again, call service.
RE NOT CLOSED (steady alarm)	The remote end door did not close during the RE closing phase. The controls returned to standby or cycle complete mode.	Clears when the condition is corrected. Check for obstruction. If the message occurs again, call service.
RE NOT OPENED (steady alarm)	The remote end door did not open during the RE opening phase. The controls returned to standby or cycle complete mode.	Check for obstruction. Unseal the door again using the softkey. See Table 3–3 on page 3–11. Try to open the door again. If the message occurs again, call service.
RESET-TEMP LOW (steady alarm)	During the exposure phase, the chamber temperature dropped below the exposure temperature set point.	Check the following: • Steam supply on? • Steam supply pressure adequate? • Steam supply strainer clogged? If above items are OK and the message occurs again, call service.

TABLE 6–7. FAILURE AND FAULT CONDITION MESSAGES

Message	What Happened	What To Do
WATER IN DRAIN (pulsing alarm)	***WARNING*** *POSSIBILITY OF INJURY: If a WATER IN DRAIN message displays, DO NOT operate the chamber door. Hot water in the chamber may spill if the door is opened. Wait until the message clears before attempting to open the door.*	
	The drain float switch detected water in the chamber drain (steady for more than 11 seconds). The diagnostic message clears after the water drains.	Clears when the condition is corrected. Wait for complete evacuation and attempt to unseal the door(s). The doors cannot be unsealed until the water drains. If the message occurs again, call service.

TABLE 6–8. INFORMATIONAL MESSAGES

Message	What Happened	What To Do
CE DOOR OPEN (no alarm)	START or SEAL DOOR was pressed while the control end door was open.	Close the door. The message clears when the door is closed.
CYCLE ABORTED (printed only)	***WARNING*** *RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).*	
	The aborted cycle has ended.	Understand that the cycle is deemed unsuccessful and the load was not sterilized.
CYCLE RESULTS (printed only)	The cycle completed successfully.	Review this section on the printout to ensure the cycle ran as expected.
ENTER TO EDIT (displayed only)	If the parameter check feature is enabled, a cycle with low cycle values was selected.	See the LOW CYCLE VALUES message.
HEATING GASKET (no alarm)	The gasket is heating.	No action required; the message clears after service adjustable time period 00:00:05–00:03:00.
INVALID CONFIG (no alarm)	The doors are configured incorrectly.	Call service.

TABLE 6–8. INFORMATIONAL MESSAGES (CONTINUED)

Message	What Happened	What To Do
MANUAL MODE (no alarm)	***WARNING*** *POSSIBILITY OF INJURY: Manual mode is intended for use by qualified service personnel to check the function of individual outputs. Attempting to operate the sterilizer when any output is set for manual operation may result in possibly dangerous conditions.*	
	One or more digital outputs are configured for manual operation. A cycle cannot be started while in manual mode.	Call service. A service password is required to reset the output(s) for automatic operation.
NEG. TRANS. PT. (printed only)	A negative conditioning pulse was achieved successfully.	No operator action required.
POS. TRANS. PT. (printed only)	A positive conditioning pulse was achieved successfully.	No operator action required.
PREPARING GASKET (no alarm)	The gasket is retracting.	No action required; the message clears in 5 seconds.
RE DOOR OPEN (no alarm)	START or SEAL DOOR was pressed while the remote end door was open.	Close the door. The message clears when the door is closed.
SERVICE MODE (no alarm)	The controls were left in service mode during prior repair. A cycle cannot be started while in service mode.	Call service. A service password is required to reset the software for automatic operation.
UTILITY SHUTDOWN (no alarm)	This message displays ONLY on units configured with the utility control option. When the preset alarm clock time is reached, the software controls prevent the steam supply to the vessel jacket.	No action required.
WAIT FOR JACKET (no alarm)	The jacket is heating up or cooling down. A cycle cannot be started until the jacket is at the right temperature.	No action required.

TABLE 6–9. INFORMATIONAL MESSAGES INDICATING POSSIBLY INCOMPLETE CYCLES

Message	What Happened	What To Do
ABORT MANUAL (no alarm)	***WARNING*** *RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).*	
	The cycle was aborted manually by the operator.	Wait until it is safe to remove load. Open the door and remove the load from the chamber.
CYCLE ADVANCED (no alarm)	***WARNING*** *RISK OF NON-STERILE DEVICE: If the cycle is aborted, advanced, or canceled, it must be considered incomplete and the load must be reprocessed (unwrapped goods or liquids) or repackaged and reprocessed (wrapped goods).*	
	A cycle phase was advanced manually. See “Advancing a Cycle” on page 4–33.	
LOW CYCLE VALUES (no alarm)	The changed cycle parameter is below the minimum parameter check value.	Enter a cycle parameter that is within the range of the factory set parameters The cycle will run with parameters outside the set range. If the cycle is run with parameters outside the range, a message displays and is printed. The parameter check value is printed within “CYCLE RESULTS” after “CYCLE COMPLETE” is printed.

SECTION 7 ROUTINE MAINTENANCE

MAINTENANCE SCHEDULE

Preventive Maintenance

Preventive maintenance performed by factory-trained service representatives, using authorized parts and service techniques, is recommended. Certain sterilizer components (see "Spare Parts" on page A–2) wear during normal use. The life of these components depends upon the sterilizer's use (number and types of cycles) and the quality of the steam and water. Planned replacement of these components is less costly and time consuming than repairing damaged equipment.

For quality service on this equipment and information on our service plans, contact Getinge USA, Inc. at 1-800-950-9912. For locations outside the United States, contact your local Getinge representative.

The customer is responsible for routine maintenance items at the intervals specified.

TABLE 7–1. ROUTINE MAINTENANCE SCHEDULE

Maintenance Item	Recommended Interval	Page
Reviewing the Cycle Printouts	DAILY	3–23
Cleaning the Sediment Screen		7–2
Cleaning the Bleed Drain Guards		7–3
Cleaning the Exterior Surfaces	WEEKLY	7–4
Cleaning the Chamber Interior		7–4
Cleaning the Accessories		7–4
Cleaning the Door Gasket(s)		7–5
Replacing the Printer Paper	WHEN REQUIRED	3–19
Resetting the Clock and Calendar		7–6
Installing the Shelves		7–8
Removing the Shelves		7–9
Blowing Down the Steam Boiler (Optional Equipment)*		7–9

* The interval at which you blow down the steam boiler depends upon the quality of your water supply. See Table 8–3 on page 8–4.

DAILY

CLEANING THE SEDIMENT SCREEN

WARNING

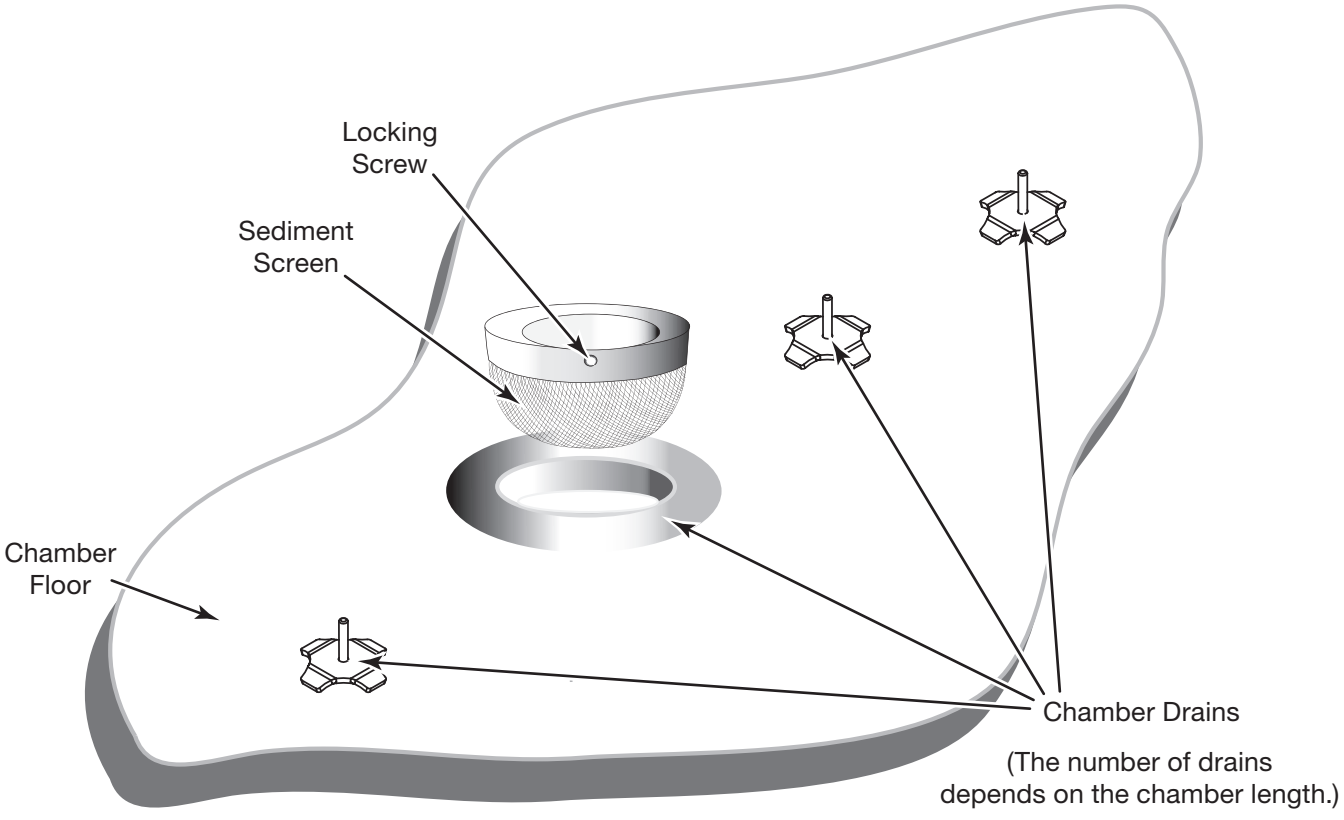
HOT SURFACE: The chamber and sediment drain screens may be hot. Allow them to cool before attempting to remove them for cleaning.

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

1. Disable the controls. See “Disabling or Enabling the Controls” on page 3–12.

2. Remove the sediment screen from the chamber drain and clean thoroughly. It can be removed and replaced without using tools.

FIGURE 7–1. SEDIMENT SCREEN



CLEANING THE BLEED DRAIN GUARDS

WARNING

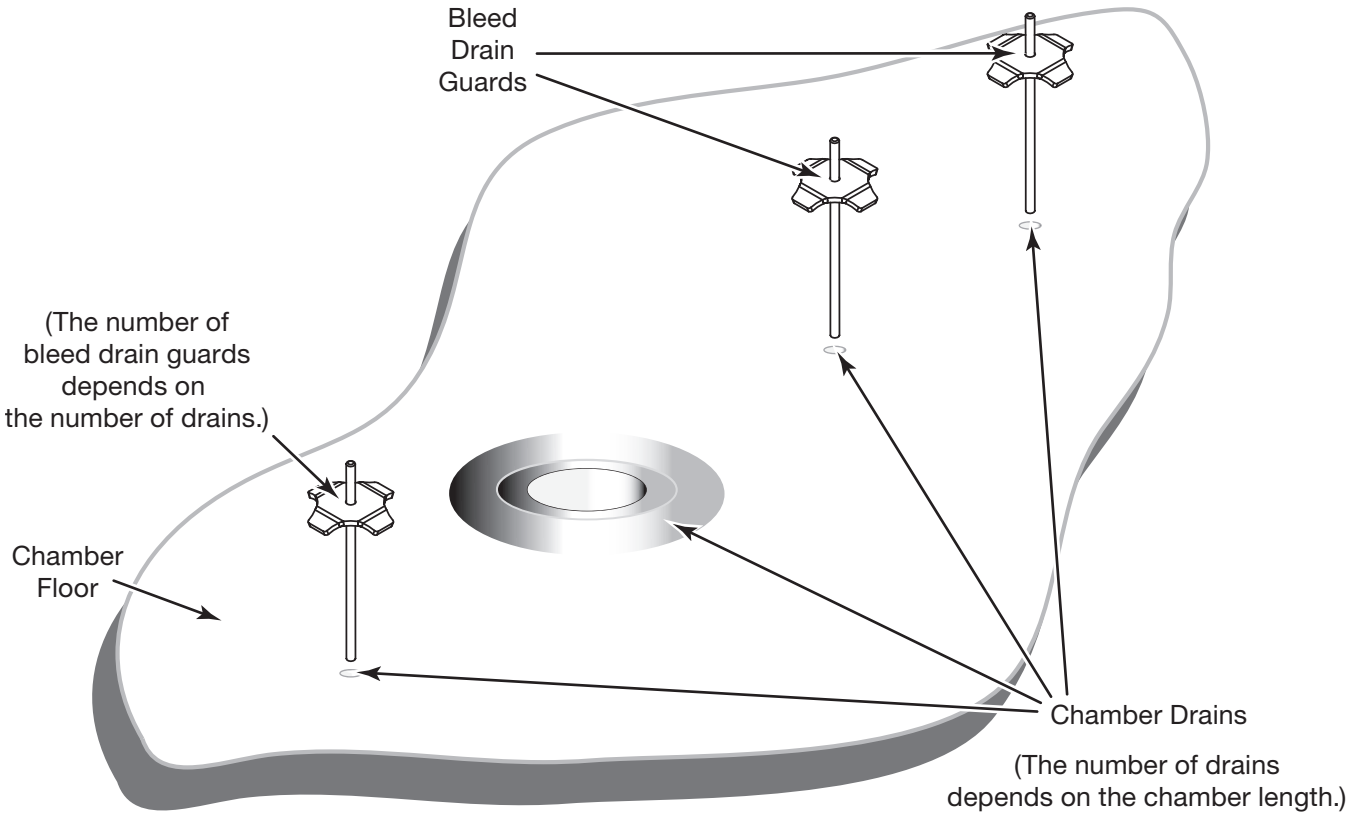
HOT SURFACES: The chamber and sediment drain screens may be hot. Allow them to cool before attempting to remove them for cleaning.

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

1. Disable the controls. See “Disabling or Enabling the Controls” on page 3–12.

2. Remove the bleed drain guards from the chamber drains and clean thoroughly. They can be removed and replaced without using tools.

FIGURE 7–2. BLEED DRAIN GUARDS



WEEKLY

CLEANING THE EXTERIOR SURFACES

Routinely clean the exterior stainless steel surfaces with Getinge Stainless Steel Polish or a mild household cleaning agent. Do not use strong or harsh solutions that may damage the painted surfaces, labels, and plastic surfaces.

CLEANING THE CHAMBER INTERIOR

WARNING

HOT SURFACE: Make sure the sterilizer chamber is cool before attempting to clean the interior surfaces.

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

The chamber interior is constructed of stainless steel and should be cleaned with a non-chloric cleaner such as Getinge Stainless Steel Chamber Cleaner (preferred) or Getinge Schedule 7 Chamber Cleaner.

CAUTION

POSSIBILITY OF DAMAGE TO EQUIPMENT: Steel wool is highly abrasive and could scratch interior surfaces. Particles from steel wool can plug drain screens and process valves causing damage to the sterilizer. A non-abrasive scrubbing pad is recommended for cleaning the chamber interior. Steel wool must NEVER be used.

Rinse or flush with clean water. Be sure to follow safety and cleaning instructions on the container to prevent injury or damage to the equipment.

CLEANING THE ACCESSORIES

Stainless steel accessories (including loading cars, transfer carriages, rack, shelves, and trays) must be cleaned and maintained properly to ensure the long life expected of this material. Failure to maintain the stainless steel surfaces properly may result in discoloration and deterioration of those surfaces.

NOTE

If saline solutions or chlorides are processed in the sterilizer, the chamber and the chamber accessories should be cleaned after each cycle.

CLEANING MATERIALS

Always use different soft, lint-free cloths to clean, to rinse, and to dry the stainless steel surfaces.

CLEANING AGENTS

The best cleaning agent is a mild detergent. If stubborn stains persist, they should be removed using a mild cleanser such as BON AMI™ or a non-chlorinated, non-abrasive cleanser.

Strong bleaches and disinfectants that are left on the stainless steel may corrode or pit the surface of the metal.

To remove any residual cleaning agent, always rinse the surface with clear water and then dry, using a soft, lint-free cloth.

CLEANING METHODS

When cleaning stainless steel accessories, never wipe the material in a circular motion. Always make the strokes in the same straight direction as the grain of the metal.

Clean the accessory surfaces in accordance with any established procedures currently in use. If there are no established procedures, clean the accessory surfaces in the following manner:

1. Apply an appropriate cleaning agent using a soft, lint-free cloth. See “Cleaning Agents” on page 7–5.
2. Rinse the surfaces using clear water and a soft, lint-free cloth.
3. Dry the surfaces using a soft, lint-free cloth.

CLEANING THE DOOR GASKET(S)

WARNING

HOT SURFACE: If the sterilizer is ON, the chamber headring, which houses the gasket, could be hot. Allow the headring to cool before cleaning the door gasket.

POSSIBILITY OF INJURY: Persons entering the chamber could become trapped. Before entering the chamber, turn the CONTROLS DISABLE/ENABLE key switch to DISABLE, remove the key, and keep it with you. When the CONTROLS DISABLE/ENABLE key switch is set to DISABLE, the control panel is locked and door motion is disabled.

The door gasket(s) should be cleaned weekly.

Clean the door gasket(s) with a damp cloth.

NOTE

If the sterilizer is a double door unit, do not open both doors at the same time. This would create an open passage between the load and unload end environments. Open one door, clean the gasket, then close the door before opening the opposite door for gasket cleaning.

WHEN REQUIRED

RESETTING THE CLOCK AND CALENDAR

Be sure to reset the clock when daylight savings time begins and ends.

NOTE

One supervisor password (with J level access) is contained in an envelope in the manual package shipped with the sterilizer. See Table B–1 on page B–9.

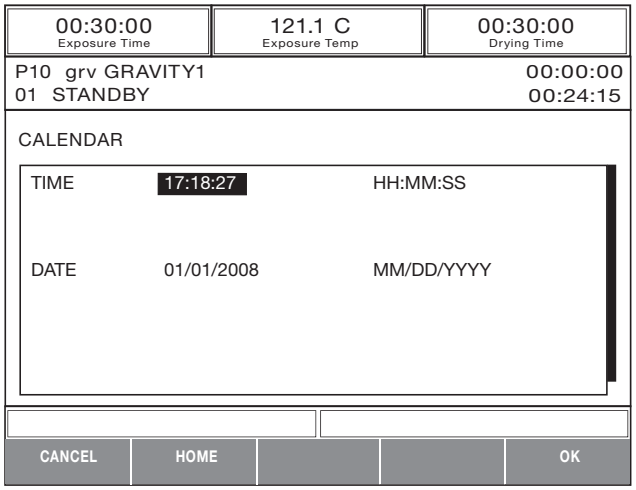
To reset the clock:

1. Press [SETUP].
2. Select SYSTEM MENU > enter password > TIME SETTINGS > CALENDAR.

3. Press ENTER.

   The CALENDAR screen displays.

FIGURE 7–3. CALENDAR SCREEN



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NOTE

The date format can be changed. See “Selecting the Language, Date Format, and Units” on page B–46.

4. Use the up/down arrow keys to select the TIME or DATE field.

5. Press ENTER.

6. Use the up/down arrow keys to increase of decrease the value within the field.

7. Use the left/right arrow keys to select the field.

8. Press ENTER.
9. Make changes to other fields as necessary by repeating step 4 through step 8.
10. Press [SAVE].

    The CONFIRM SAVE? YES OR NO prompt appears.

NOTE

If desired the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM/CANCEL setting on the PANEL SETUP screen. See “Setting Up the Display Panel” on page B–49.

11. Press [YES].
12. Press [OK].

    The Time Settings menu displays.

13. Press [HOME].

    The Process screen displays.

INSTALLING THE SHELVES

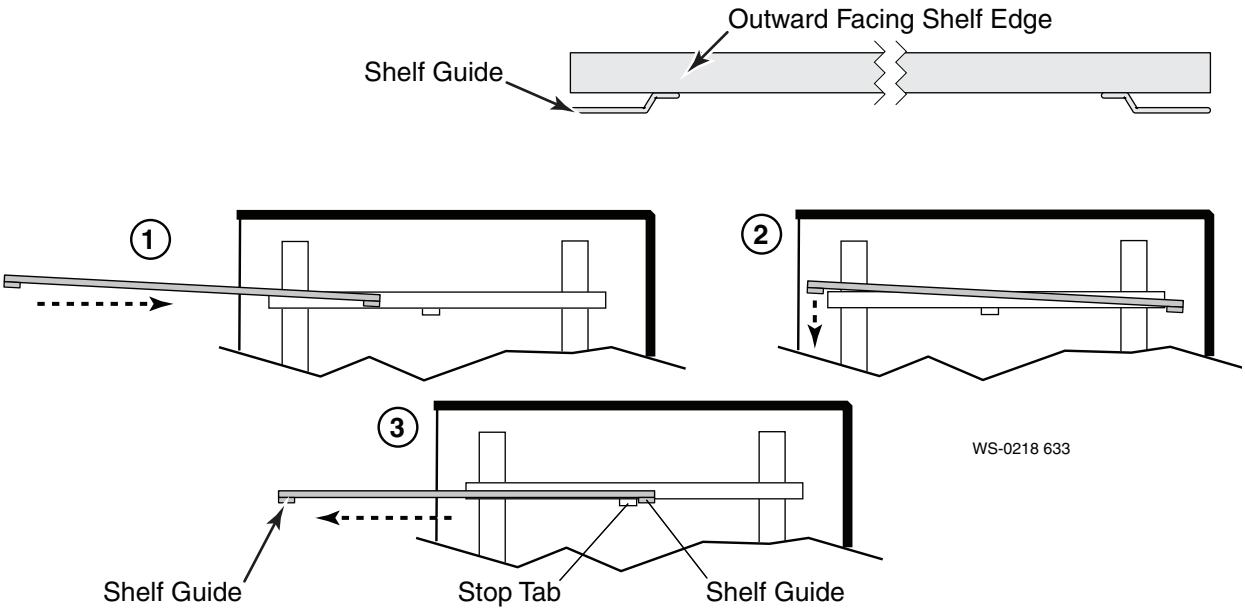
WARNING

HOT SURFACES: The rack and shelves may be hot enough to cause burns. Wear protective gloves when extending the shelves out of the chamber.

NOTE

On 26-inch units, check that the shelf edge facing out has shelf guides.

FIGURE 7–4. INSTALLING A SHELF



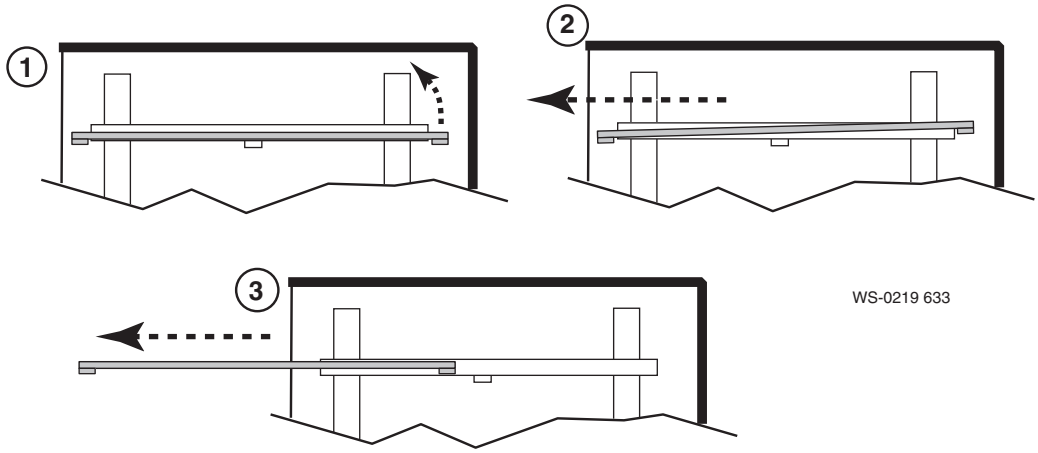
1. Set the shelf on top of the shelf support brackets.
2. Slide the shelf back until the back edge drops down at the end of the support bracket.
3. Pull the shelf forward until the shelf guide contacts the stop tab on the shelf support to be sure it is installed properly. Then slide the shelf to the back of the chamber.

REMOVING THE SHELVES

WARNING

HOT SURFACES: The rack and shelves may be hot enough to cause burns. Wear protective gloves when extending the shelves out of the chamber.

FIGURE 7–5. REMOVING A SHELF



1. Slide the shelf backward into the chamber until it touches the back wall. Tip the shelf so the back edge is raised up above the support bracket.

2. Slide the shelf forward until it can rest on the shelf support.

3. Slide the shelf forward and remove it from the chamber.

BLOWING DOWN THE STEAM BOILER (OPTIONAL EQUIPMENT)

If the sterilizer has an integral steam boiler without automatic blow-down, blow down the boiler manually. See “Blowing Down a Steam Boiler Manually” on page 8–4.

NOTE

A short boiler recovery time is necessary after the blow-down completes.

SECTION 8 OPTIONAL EQUIPMENT

This section includes information for the operation of the following options:

Option	Page
Steam Boiler	8–2
Steam Boiler Automatic Blow-down Package	8–8
Steam Boiler Service Maintenance	8–10
Uninterruptible Power Supply	8–11

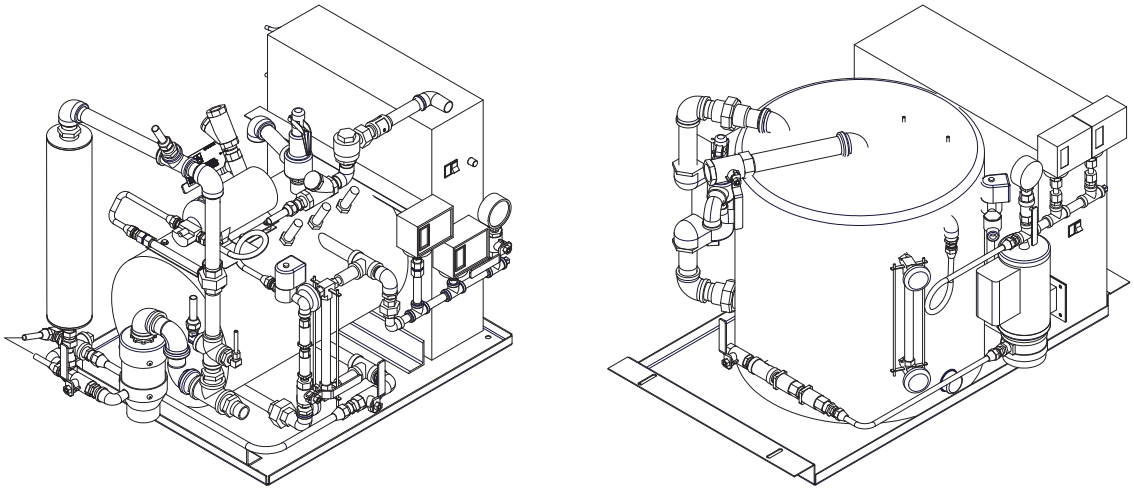
Contact your Getinge sales or service representative for information about the following additional, optional equipment that can be added to your 633HC Steam Sterilizer.

Water Saver Modernization Package	The Getinge water-saver is an add-on system that incorporates a water ejector with a pump and a water reservoir to recirculate the water that creates the vacuum necessary for part of the sterilization cycle. The water-saver can typically save 60 to 70% of the total water used during a cycle with 30 minutes of drying time.
T-Doc Software System	The 633HC Steam Sterilizer is compatible with the Getinge T-Doc modular software system for traceability and documentation of processed goods.
RO Water Treatment System	Today's ever-changing water quality issues demand that point-of-use water treatment systems become an essential component of equipment applications. Because municipal water treatment facilities are designed to reduce mainly biological contaminants, they do not decrease contaminants that affect the performance of water-dependent equipment. The Getinge RO water treatment systems are designed specifically for use on applications found throughout the health care industry, including point-of-use steam generators. When used as suggested by the manufacturer, the water treatment systems significantly reduce or eliminate boiler scaling.

STEAM BOILER

A 633HC Steam Sterilizer is equipped with either a GTS-30A or a GTS-45A steam boiler (see Figure 8–1). The steam boiler used depends upon the chamber length of the sterilizer. See Table 8–1 for the proper boiler unit.

FIGURE 8–1. STEAM BOILER MODELS



GTS-30A STEAM BOILER
(horizontal boiler tank)

CAS-45A STEAM BOILER
(vertical boiler tank)

WS-0414

TABLE 8–1. AVAILABLE STEAM BOILERS

Sterilizer Chamber Length	Steam Boiler
26 in. (660 mm)	GTS-30A
39 in. (1000 mm)	CAS-45A
51 in. (1300 mm)	CAS-45A

The optional Getinge steam boiler is a self-contained, electrically-heated unit with a solid-state, floatless water-level control. The control is dependent on sensing the electrical resistivity of the water, which must not exceed 50 kΩ-cm.

The steam boiler can be accessed by entering the service area.

WATER QUALITY INFORMATION FOR STEAM BOILERS

NOTE

An analysis of the on-site steam boiler feedwater should be made by a recognized and reliable water treatment company to ascertain the existing condition and treatment required.

Water quality can affect efficiency or result in boiler damage if neglected. Boiler feedwater contains impurities in solution and suspension. These impurities concentrate in the boiler since the steam generated is essentially pure. The concentration of these impurities increases as more feedwater is introduced into the boiler and steam is produced. If the suspended solids are allowed to concentrate beyond certain limits, a deposit or "scale" forms on the boiler internal surfaces. This deposit can interfere with proper boiler operation and cause boiler failure.

The concentration of these feedwater impurities is generally controlled by blow-down frequency and by the feedwater quality. Blow-down is the removal of a portion of the boiler water with high solids concentration and replacing it with makeup water of a lower concentration. Depending on the configuration of the sterilizer, blow-down occurs automatically at a specified time (see "Steam Boiler Automatic Blow-down Package" on page 8–8) or must be performed manually (see "Blowing Down a Steam Boiler Manually" on page 8–4).

For optimum results, the feedwater supply should be tested prior to initial start-up. Feedwater must meet the following requirements.

TABLE 8–2. WATER SPECIFICATION

Hardness	0.5–5.0 gpg (8–85 ppm)
Resistivity	Not to exceed 50,000 Ω-cm
Temperature	100°F–150°F (38°C–65°C)
Total Dissolved Solids	150 ppm max.
pH	6.8–7.5

ppm = parts per million, gpg = grains per gallon

BLOWING DOWN A STEAM BOILER MANUALLY

WARNING

BURN HAZARD: The drain valve is hot. Wear protective gloves.

NOTE

This procedure does not apply to units with the automatic blow-down package. See “Steam Boiler Automatic Blow-down Package” on page 8–8.

If a sterilizer is equipped with a steam boiler, it must be blown down regularly to remove mineral deposits and loose scale. The frequency at which the sterilizer needs to be blown down depends upon the quality of the water; see Table 8–3.

TABLE 8–3. BLOW-DOWN FREQUENCY

Water Conditions	Blow-Down Frequency	Drain Valve Open Time (see note)
Hard water	Daily	10 seconds
Soft water	Weekly	10 seconds
RO water treatment system	Monthly	10 seconds

NOTE

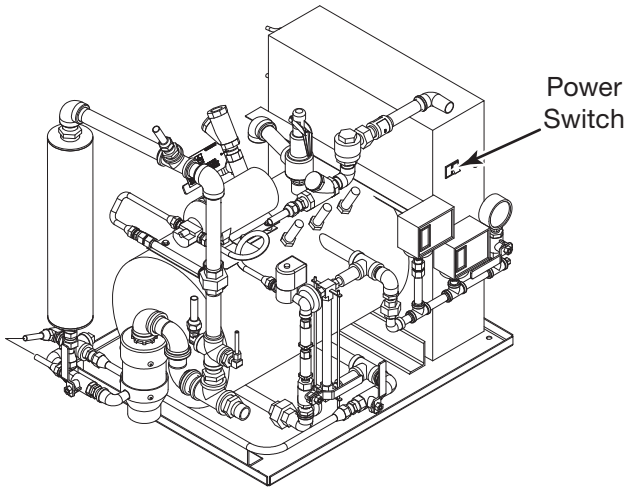
You may need to adjust the time based upon the results of cleaning the heating elements during maintenance. See “Steam Boiler Service Maintenance” on page 8–10.

To blow down the boiler manually:

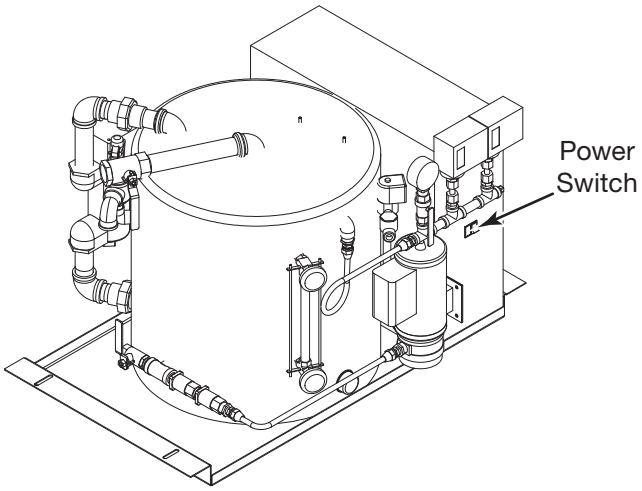
1. Turn OFF the sterilizer controls. See “Turning the Controls OFF” on page 4–29.

2. If the sterilizer has a cabinet, remove the left side panel to allow access to the steam boiler. Lift the panel up and out.

FIGURE 8–2. POWER SWITCH ON THE STEAM BOILER



GTS-30A STEAM BOILER



CAS-45A STEAM BOILER

WS-0425

3. Turn OFF the power switch on the steam boiler. See Figure 8–2.

FIGURE 8–3. WATER TO EJECTOR SOLENOID VALVE (26-INCH UNIT)

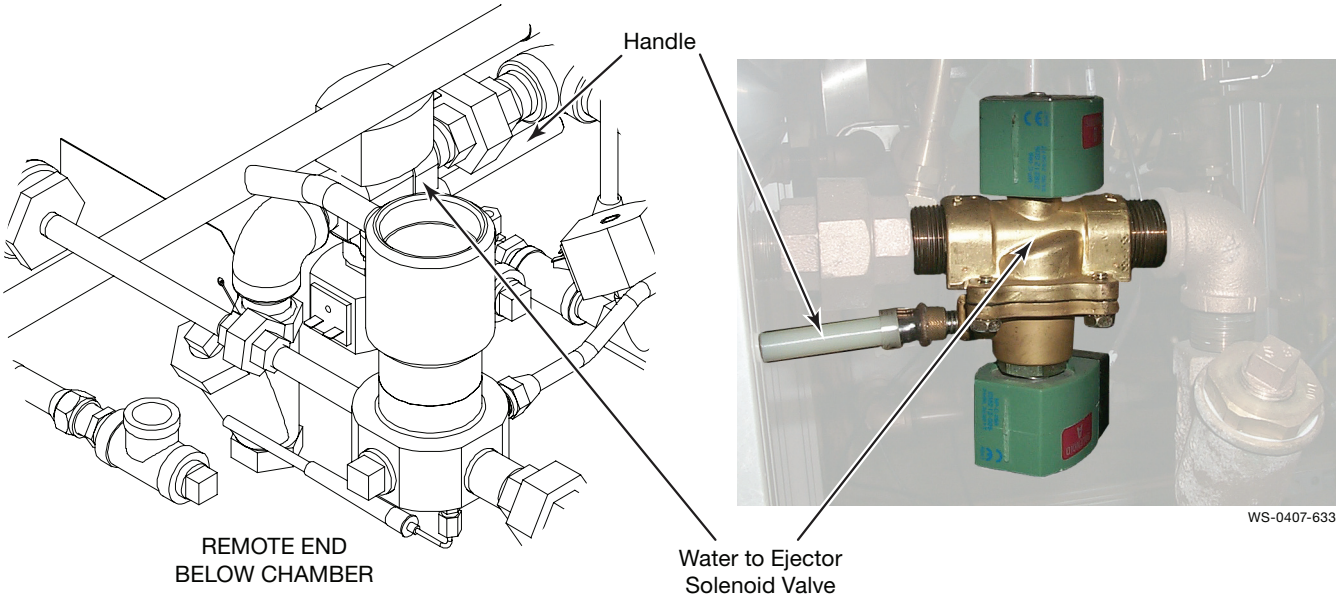
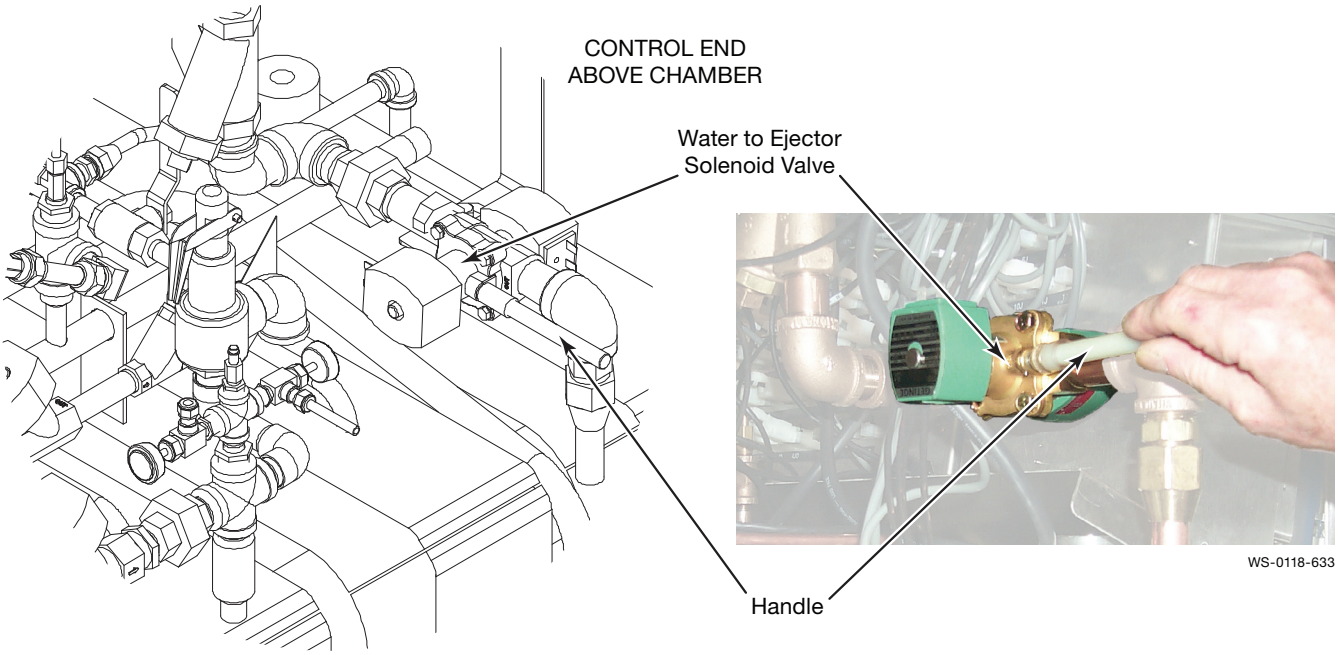
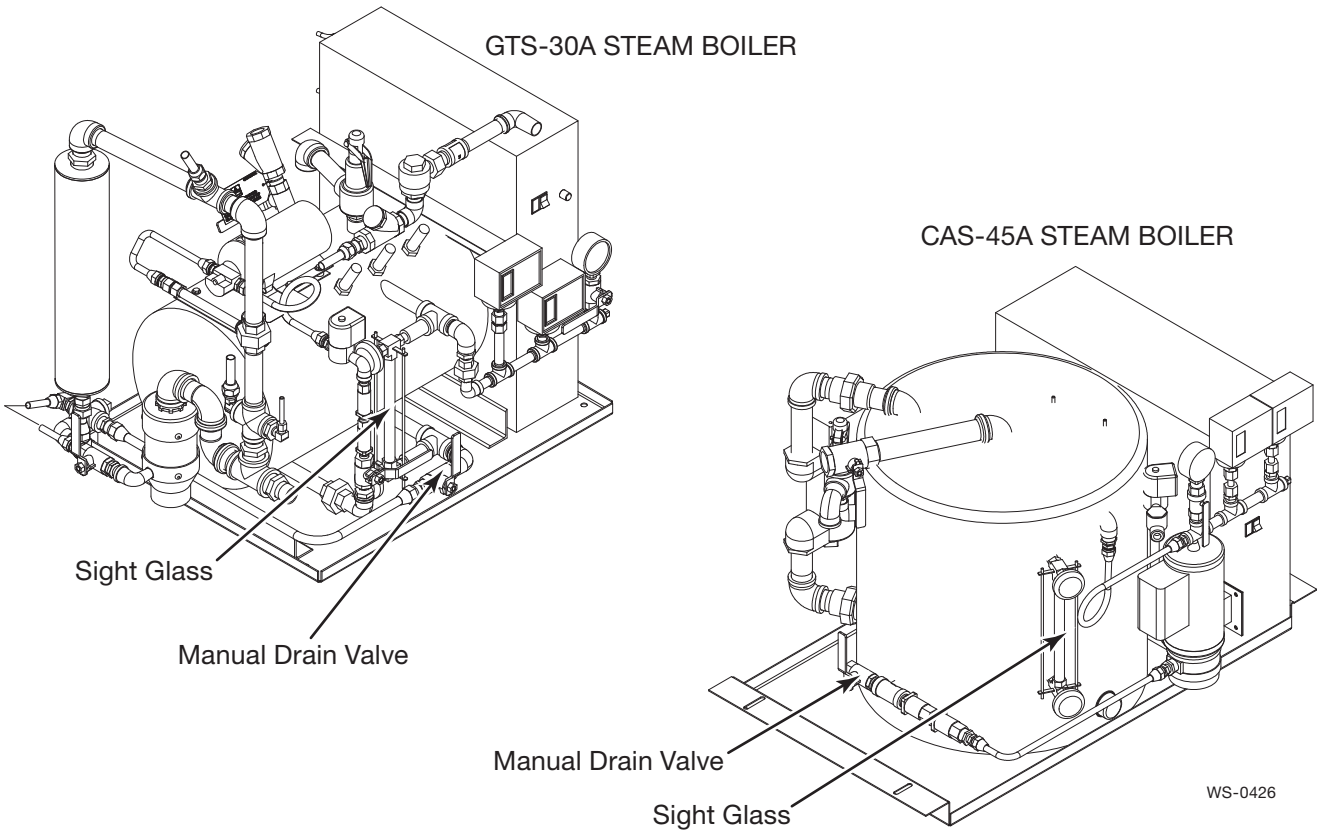


FIGURE 8–4. WATER TO EJECTOR SOLENOID VALVE (39- AND 51-INCH UNITS)



4. Turn the water to ejector valve ON by pushing the white handle IN and rotating it CLOCKWISE approximately 1/4 turn to the open position indicated on the valve housing.

FIGURE 8–5. MANUAL DRAIN VALVE AND SIGHT GLASS ON THE STEAM BOILER



WARNING

BURN HAZARD: The drain valve is hot. Wear protective gloves.

5. While the steam boiler is at full pressure, open the manual drain valve for approximately 10 seconds (see Table 8–3 on page 8–4) to remove any mineral deposits and loose scale. Keep the valve open just until the sight glass is empty.

NOTE

It is not necessary to drain the water completely from the boiler. The more water you drain from the boiler (that is, the longer the drain valve is open), the longer it takes for the sterilizer to recover and begin normal operations.

6. As soon as the sight glass is empty, close the manual drain valve.

7. Turn ON the sterilizer controls. See “Turning the Controls ON or OFF” on page 3–13.

8. Turn ON the steam boiler switch to bring the water supply back up to the operating level.

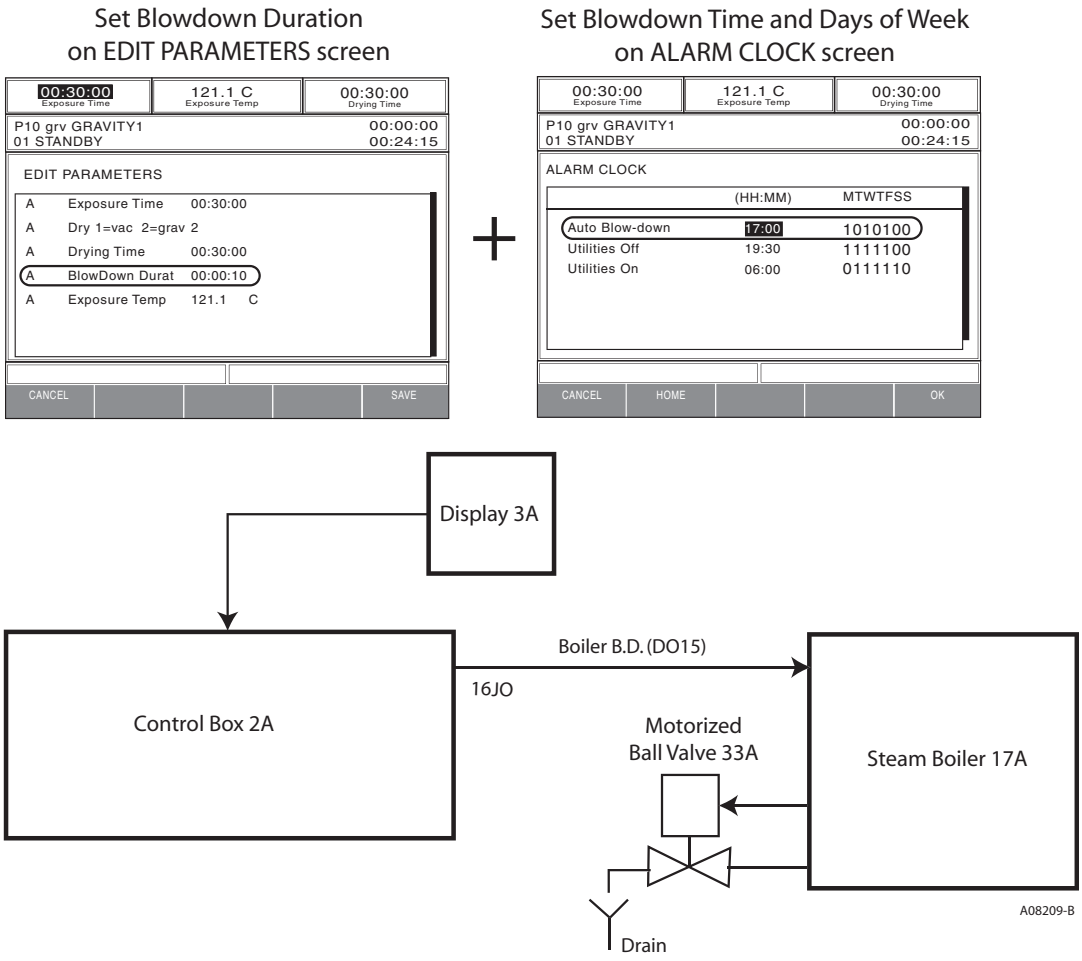
9. Use the white handle connected to the water solenoid valve to close the valve. Push in on the handle while turning it to the closed position.

STEAM BOILER AUTOMATIC BLOW-DOWN PACKAGE

If a sterilizer is equipped with a steam boiler, it must be blown down regularly to remove mineral deposits and loose scale. On units with the automatic blow-down option, the sterilizer controls operate a motorized drain valve in the steam boiler, opening it for 0 to 20 seconds.

Automatic blow-down occurs when the alarm clock is activated and the sterilizer is in STANDBY mode. Blow-down duration is an adjustable cycle parameter (see Figure 8–6). At the scheduled time, the sterilizer controls operate the motorized ball valve to blow down the steam boiler.

FIGURE 8–6. AUTOMATIC BLOW-DOWN PROGRAMMABLE TIMER



NOTE

The blow-down duration time (BlowDown Durat) must be set for each cycle selection. When auto blow-down is activated, the BlowDown Durat value for the last cycle selected is used.

NOTE

If a cycle is in progress at the time of the scheduled blow-down, auto blow-down occurs after the cycle completes.

SETTING UP AUTO BLOW-DOWN

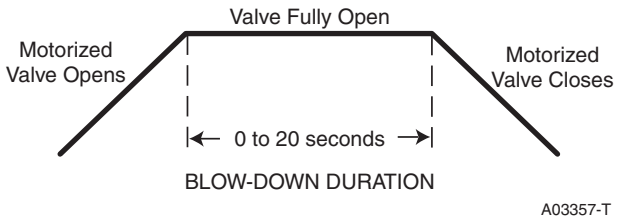
To set up the auto blow-down feature:

1. Set the blow-down duration. See “Editing Cycle Parameters” on page B–20.

2. Set the time and days of the week automatic blow-down will occur.

   During automatic blow-down (see Figure 8–7), the control system opens the drain valve, holds the valve open for a specified time (blow-down duration), and then closes the drain valve.

FIGURE 8–7. AUTOMATIC BLOW-DOWN SEQUENCE



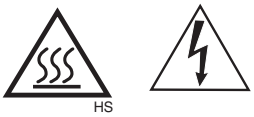
NOTE

If the blow-down duration is set for 0 seconds, a short blow-down still occurs while the drain valve is opening and closing.

When automatic blow-down is activated, the blow-down duration is determined by the setting of the currently selected cycle.

Blow-down duration can be different for each cycle. The blow-down duration is the time (0 to 20 seconds) specified for the current cycle.

STEAM BOILER SERVICE MAINTENANCE



WARNING

POSSIBILITY OF INJURY: Steam boiler maintenance should be performed only by qualified personnel following the procedures in the 600 Series Technical Manual (61301607028).

BURN HAZARD/SHOCK HAZARD: Before performing any maintenance on the boiler, allow the boiler to cool down and disconnect the electrical power at the source.

FIRE HAZARD: Loose electrical connections may result in an electrical fire. When performing periodic maintenance, check that the heating elements, element flange bolts, contactors, and three-phase supply terminal block are torqued to the values specified in the Technical Manual (61301607028).

For optimum performance, perform the following maintenance procedures at the specified intervals. Refer to the *Technical Manual (61301607028)* for steam boiler maintenance procedures.

TABLE 8–4. STEAM BOILER MAINTENANCE SCHEDULE

Maintenance Item	Recommended Interval
Remove and clean the level probes. Blow out the boiler pressure control sensing line. Check the total dissolved solids of the boiler feedwater. Check the total dissolved solids of the water inside the boiler. Check that the amperage is similar in each phase. Check that the sight glass is clear and there are no leaks.	EVERY SIX MONTHS

UNINTERRUPTIBLE POWER SUPPLY

GENERAL DESCRIPTION

NOTE

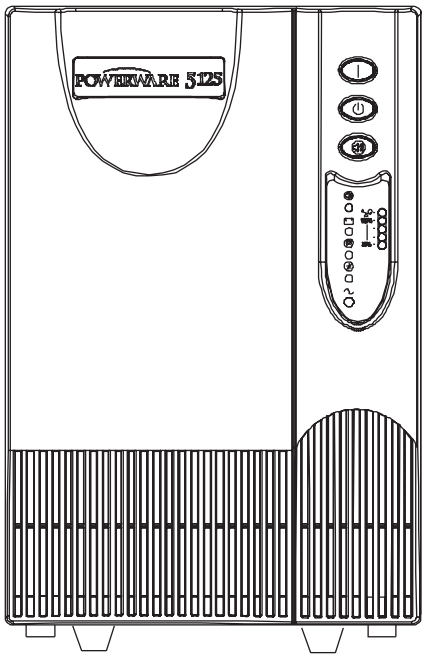
The manufacturer's instruction manual contains important information about the UPS. Keep the UPS manual with the sterilizer User Manual for future reference.

If a copy of the manual is required, contact the Powerware Parts Center at 919-981-8142 to order a replacement manual. A printable electronic version (PDF file) of the manual is also available for download at www.powerware.com.

The optional uninterruptible power supply (UPS) provides 115 Vac power for the sterilizer in the event of a power failure.

The UPS is capable of starting and completing a 30 minute exposure cycle with no dry time, including closing the door at the start of the cycle and opening the door at the end of the cycle. The UPS operates only the controls to complete the cycle that is running at the time of the power failure. No optional equipment (such as, the steam boiler and the water saver) operates with the UPS.

FIGURE 8–8. UNINTERRUPTIBLE POWER SUPPLY (UPS)



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APPENDIX A CONSUMABLE STOCK AND SPARE PARTS

To order these items, contact Getinge USA, Inc. at 1-800-950-9912. For locations outside the United States, contact your local Getinge representative.

CONSUMABLE STOCK

Description	Part No.
Biological Indicators	
• Biosign Indicator (box of 50)*	61301600022
• Biosign Indicator (box of 10)*	61301600021
• Biosign EZ-VU Test Pack (case of 20)*	61301603337
* requires Biosign 55°C incubator (61301600055)	
Chemical Indicators	
• Steam Integrator (box of 250)	61301658261
• Steam Monitor Strip, 8 in. (box of 250)	61301660870
• Steam Monitor Strip, 4 in. (box of 250)	61301600018
Printer Paper	
• Without cores (package of 10)	61301601272
• Extra core	61301603761
Schedule 7 Chamber Cleaner (case of 4 one-gallon bottles)	61301605287
S.M.A.R.T. Pack (case of 30)	61301668650
Stainless Steel Chamber Cleaner (case of 4 one-gallon bottles)	61301605284
Stainless Steel Polish (18 oz)	61301600026

SPARE PARTS

Refer to the *Parts Catalog (61301607029)* for an illustrated parts breakdown and list of recommended spare parts. Electrical and piping schematics may be found in the *Technical Manual (61301607028)*.

To maximize the continuing operation of a sterilizer, Getinge recommends the annual replacement of the components listed in Table A–1. Getinge service plans include the planned replacement of these components. This schedule is based on an average use (approximately 2500 cycles/year) and may vary depending on actual use.

TABLE A–1. SPARE PARTS - REPLACED ANNUALLY

Spare Part Description	Identifier	Type	Rating	Part Number
Air-in Filter				61301600303
Check Valve, Spare Parts Package	1CV, 2CV, 3CV (3/8 in.valve) 4CV, 7CV (1/2 in. valve) 5CV, 6CV (3/4 in. valve)	—	—	513369
Door Gasket				61301609936
PM Package, Rebuild, Valves, LWR, 600	—	—	—	61301607460
PM Package, Rebuild, Valves, UPR, 600	—	—	—	61301607459
PM Package, Replace, Valves, LWR, 600				61301607462
PM Package, Replace, Valves, UPR, 600	—	—	—	61301607461
Steam Trap, Complete	1TR, 2TR, 3TR	—	—	61301602492

TABLE A–2. SPARE PARTS - REPLACED AS REQUIRED

Spare Part Description	Identifier	Type	Rating	Part Number
Bleed Drain Assembly	—	—	—	61301607166
Drain Screen, Main	—	—	—	61301608230
Optional 230:115 V Transformer Box Fuse	1F	T/SB	5.0 A, 250 V	530837
OP30 Assembly	3A	—	—	61301608168
PCB, CM10, PACS	2A2U	—	—	61301609707
PCB, CPU, PACS	2A1U	—	—	61301608297
Power Box Fuses	1F	T/SB	5.0 A, 250 V	530837
	2F	T/SB	4.0 A, 250 V	61301600655
	3F	T/SB	8.0 A, 250 V	530838
	4F	T/SB	2.5 A, 250 V	61301600654
	5F	T/SB	2.5 A, 250 V	61301600654
	6F	T/SB	2.5 A, 250 V	61301600654
XDCR Pressure, 4-20 MA	1PT	—	—	61301609710
XDCR, RTD, 100 OHM	1RT, 2RT, 5RT	—	—	61301600638

APPENDIX B SUPERVISOR FUNCTIONS

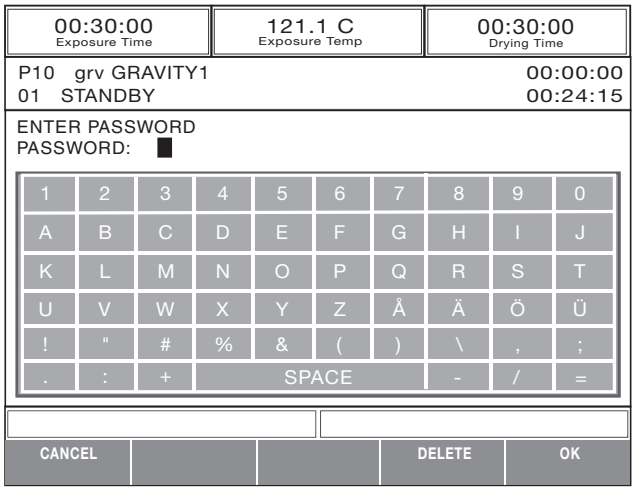
The purpose of this section is to help you operate the sterilizer to its fullest capacity. The following procedures provide information and instructions that are part of the initial setup and for situations that may develop that are not part of day-to-day sterilizer operation.

Topic	Page
Entering a Password	B–2
Menu Options	B–4
Password Access	B–9
Setting Up a User Account	B–10
Changing User Access Areas	B–15
Changing a User Password	B–17
Deleting a User Account	B–19
Editing Cycle Parameters	B–20
Parameter Check	B–30 and Appendix C, “Parameter Check Feature”
Setting the Clock and Calendar	B–32
Setting Up the Auto Blow-down	B–33
Setting Up the Utilities On and Off Times	B–35
Bypassing Utility Shutdown Mode	B–38
Editing the Cycle Number	B–38
Editing the Cycle Name	B–39
Assigning the Sterilizer Name	B–44
Selecting the Language, Date Format, and Units	B–46
Setting Up the Display Panel	B–49
Viewing the About Screen	B–52

ENTERING A PASSWORD

A password is required to view the System Menu and to edit cycle parameters. When a password is needed, the ENTER PASSWORD screen displays.

FIGURE B–1. ENTER PASSWORD SCREEN



WS-0017 HC

To enter your password:

1. For each character in the password:

   a. Use the arrows to select the character.

   b. Press ENTER to store the character.

NOTE

If you make a mistake, press [DELETE] to erase the last character.

The right/left directional arrows wrap, that is, pressing the right arrow when the last key in a row is highlighted selects the first key in the same row; and vice versa. The up/down directional arrows behave in a corresponding manner. You can use this feature to reduce the number of switch presses needed to enter the password.

2. Press [OK].

NOTE

If the password you enter is incorrect, the following message displays:

WRONG PASSWORD
PLEASE TRY AGAIN

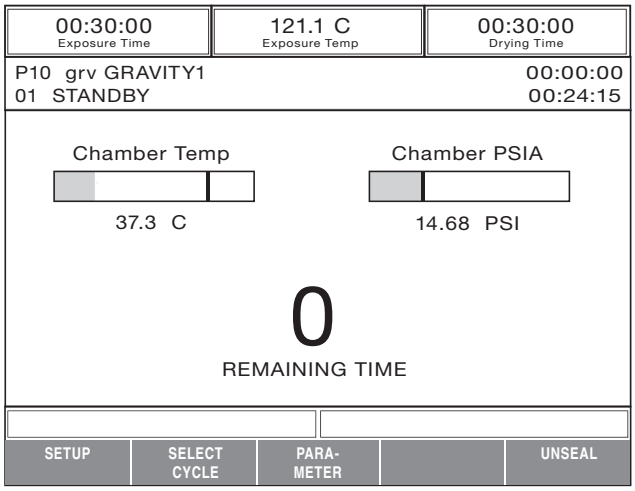
Wait for the message to disappear and enter the correct password.

The appropriate screen displays.

- See “Viewing the System Menu Options” on page B–5 for a description of the System Menu.
- See “Editing Cycle Parameters” on page B–20 for a discussion of the edit feature.

MENU OPTIONS

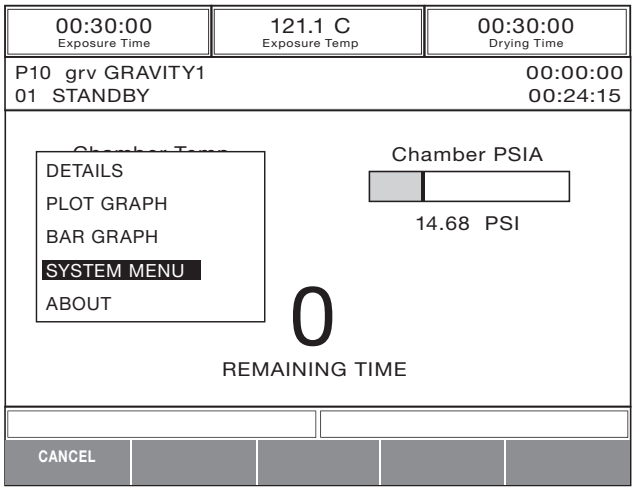
FIGURE B–2. PROCESS SCREEN



WS-0014 HC

Press [SETUP] on the Process screen to view the Setup menu options.

FIGURE B–3. SETUP MENU SCREEN



WS-0039 HC

The Setup menu has 5 (five) items:

- Details—see “Details Screen” on page 3–8
- Plot Graph—see “Plot Graph Screen” on page 3–8
- Bar Graph—see “Bar Graph Screen” on page 3–7
- System Menu—see “Viewing the System Menu Options” on page B–5
- About—see “Viewing the About Screen” on page B–52

VIEWING THE SYSTEM MENU OPTIONS

The System Menu lists the features of the software that are available for your use. A password with specific area access is required to view the menu options; therefore, what you see may vary from Figure B–4 on page B–6. For password access information, see “Password Access” on page B–9.

NOTE

One Supervisor password (with J level access) is contained in an envelope in the manual package shipped with the sterilizer.

Most procedures require a user password. See “Setting Up a User Account” on page B–10.

Possible menu options include:

- Time Settings—see “Time Settings Menu” on page B–7
- Configuration—see “Configuration Menu” on page B–8
- Passwords—see:
  - “Setting Up a User Account” on page B–10
  - “Changing User Access Areas” on page B–15
  - “Changing a User Password” on page B–17
  - “Deleting a User Account” on page B–19
- Save RAM to Flash

NOTE

The Save RAM to Flash menu option is a diagnostic feature intended for use only by a qualified Getinge USA service representative.

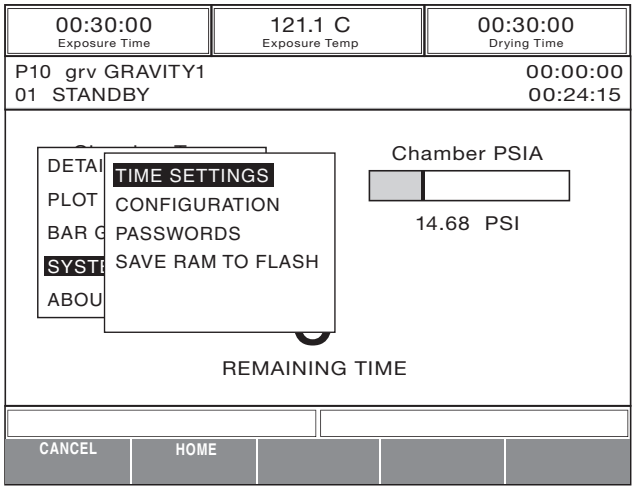
To view the System Menu options:

1. Press [SETUP].
2. Select SYSTEM MENU.
3. Press ENTER.

   The ENTER PASSWORD screen displays.
4. Enter your password. See “Entering a Password” on page B–2.

   A System Menu, similar to Figure B–4 on page B–6, displays.

FIGURE B–4. SYSTEM MENU SCREEN



When accessing the System Menu, a password must be entered; only the submenus assigned to that password are visible. If the user leaves the System Menu (using CANCEL or HOME), the user is logged out and is prompted for a password when access to the System Menu is attempted.

NOTE

A password is required for access to the System Menu selections. Individual passwords have specific access privileges. For example, a user may be given access to the Time Settings menu but not the Configuration menu. For password access information see “Password Access” on page B–9.

5. Depending upon your access level, select one of the following:
   - TIME SETTINGS—see “Time Settings Menu” on page B–7
   - CONFIGURATION—see “Configuration Menu” on page B–8
   - PASSWORDS—see “Password Access” on page B–9
   - SAVE RAM TO FLASH

NOTE

The Save RAM to Flash menu option is a diagnostic feature intended for use only by a qualified Getinge USA service representative.

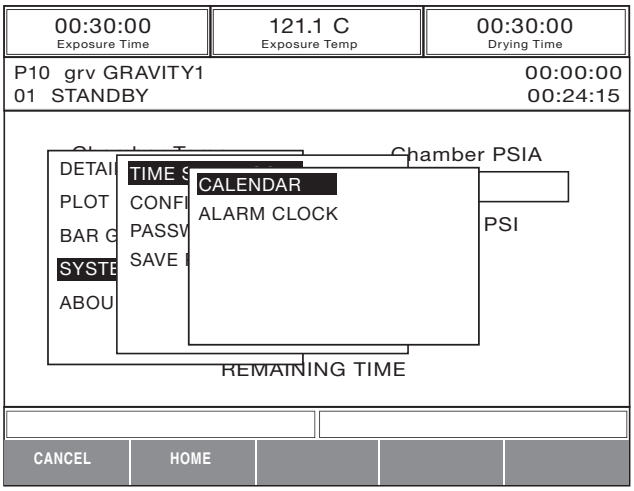
6. Press ENTER.

TIME SETTINGS MENU

The Time Settings menu lists the following software features that can be adjusted:

- Calendar—see “Setting the Clock and Calendar” on page B–32
- Alarm Clock—see:
  - “Setting Up the Auto Blow-down” on page B–33
  - “Setting Up the Utilities On and Off Times” on page B–35

FIGURE B–5. TIME SETTINGS MENU SCREEN



CONFIGURATION MENU

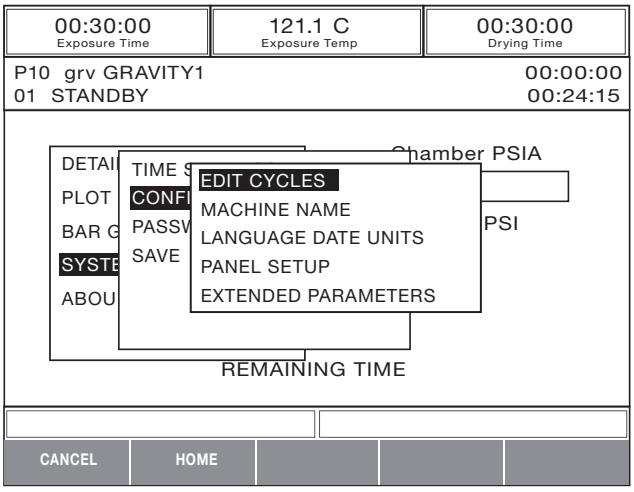
The Configuration menu lists the software features that can be adjusted:

- Edit Cycles—see “Editing the Cycle Number” on page B–38
- Machine Name—see “Assigning the Sterilizer Name” on page B–44
- Language Date Units—see “Selecting the Language, Date Format, and Units” on page B–46
- Panel Setup—see “Setting Up the Display Panel” on page B–49
- Extended Parameters—see Note below
- Configure Parameters—see Note below

NOTE

The Extended Parameters and the Configure Parameters menu options are diagnostic features intended for use only by a qualified Getinge USA service representative.

FIGURE B–6. CONFIGURATION MENU SCREEN



WS-0031 HC

PASSWORD ACCESS

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

One of the features of the 633HC Steam Sterilizer is password protection by access area. Each area allows access to various screens as defined in the following table.

TABLE B–1. PASSWORD ACCESS AREAS

Access Letter	Access Area	Access Rights	Related Task	Page
A	Parameter Settings	Parameters screen and all sub-screens	Editing Cycle Parameters	B–20
B	Calendar and Alarm Clock	Time Settings screen and all sub-screens	Setting the Clock and Calendar Setting Up the Utilities On and Off Times Setting Up the Auto Blow-down	B–32 B–35 B–33
C	Calibration	SERVICE ACCESS	—	—
D	Boolean Password	PROGRAMMER ACCESS	—	—
E	Service	SERVICE ACCESS	—	—
F	Hardware Setup	SERVICE ACCESS	—	—
G	Configuration	Configuration screen and all sub-screens	Editing the Cycle Number Assigning the Sterilizer Name Selecting the Language, Date Format, and Units Setting Up the Display Panel	B–38 B–44 B–46 B–49
H	System Definition	PROGRAMMER ACCESS	—	—
I	Boolean Code	PROGRAMMER ACCESS	—	—
J	Password Setup	Password screen and all sub-screens	Setting Up a User Account Changing User Access Areas Changing a User Password Deleting a User Account	B–10 B–15 B–17 B–19
K	Documentation	SERVICE ACCESS	—	—
L	Boolean Password	PROGRAMMER ACCESS	—	—

CAUTION

The supervisor must be sure all users understand how adjusting individual cycle parameters affect the processing cycle.

Password access that is restricted to SERVICE ACCESS as shown in Table B–1 on page B–9 is required for service procedures such as calibration and troubleshooting. Access to these areas should be restricted to qualified Getinge USA service representatives or qualified service personnel.

NOTE

A password is NOT required to run a cycle.

SETTING UP A USER ACCOUNT

To set up a user password:

1. Press [SETUP].
2. Use the up/down arrow keys to select SYSTEM MENU.
3. Press ENTER.

   The ENTER PASSWORD screen displays.

4. Enter your password. See “Entering a Password” on page B–2.

PASSWORD SETUP
ACCESS REQUIRED

NOTE

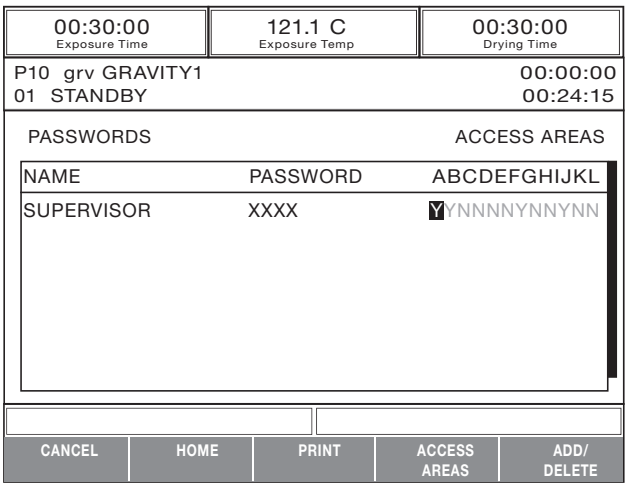
One Supervisor password (with J level access) is contained in an envelope in the manual package shipped with the sterilizer.

The System Menu displays.

5. Use the up/down arrow keys to select PASSWORDS.
6. Press ENTER.

   The PASSWORDS screen displays.

FIGURE B–7. PASSWORDS SCREEN



WS-0427 HC

NOTE

[ACCESS AREAS] displays a list of access areas. The access areas are defined in Table B–1 on page B–9.

[PRINT] prints a password report.

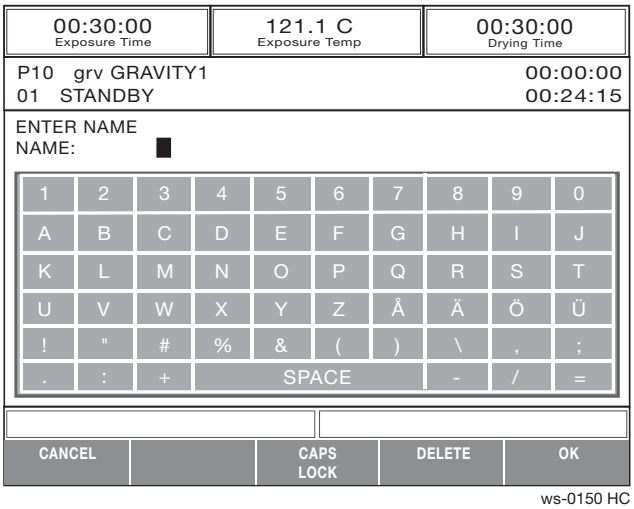
7. Press [ADD/DELETE].

   The softkey labels change to [CANCEL], [ADD USER], and [DELETE USER]. If the only account listed is the supervisor's account, then [DELETE USER] does not display.

8. Press [ADD USER].

   The ENTER NAME screen displays.

FIGURE B–8. ENTER NAME SCREEN



ws-0150 HC

9. Enter the user name.

a. Use the arrow keys to select the first alphanumeric character for the user name.

NOTE

[CANCEL] exits the screen without saving the user name.

[CAPS LOCK] changes the keyboard display between uppercase and lowercase alphabetic characters.

[DELETE] removes the character to the left of the cursor.

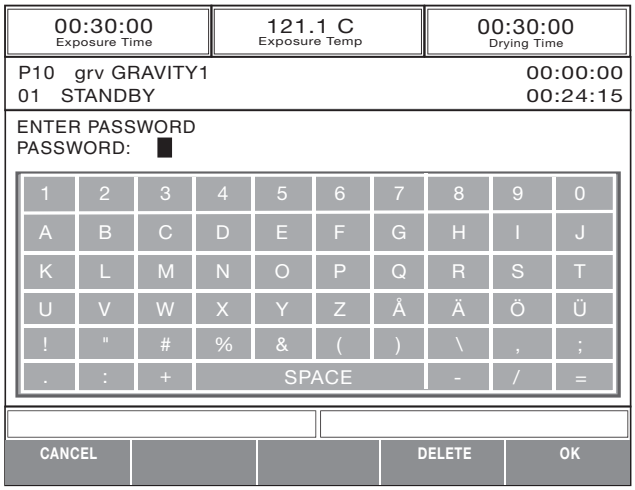
b. Press ENTER.

c. Repeat steps a and b until all the characters are entered.

d. Press [OK].

The ENTER PASSWORD screen displays.

FIGURE B–9. ENTER PASSWORD SCREEN



WS-0017 HC

10. Enter the new user password.

a. Use the arrow keys to select the first character.

b. Press ENTER.

c. Repeat steps a and b for each additional character.

NOTE

A password must be 3–6 characters in length, contains only letters and numbers, and is not case sensitive.

The characters entered appear to the left of the cursor.

NOTE

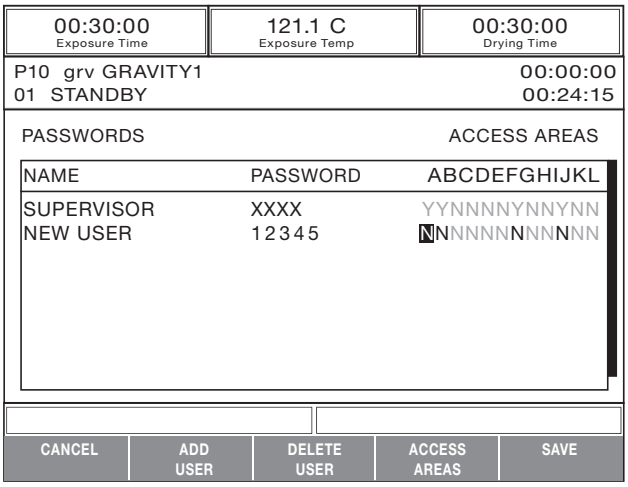
If you make a mistake, press [DELETE] to erase the last character.

The software does not allow entering a duplicate password. If the password being entered duplicates an existing password, the cursor moves to the first character position, no characters display, and the system waits for another unique password to be entered.

d. Press [OK].

The PASSWORDS screen displays. The new user name and password appear at the bottom of the list and the solid cursor is at the first ACCESS AREAS option.

FIGURE B–10. PASSWORDS SCREEN



WS-0442 HC

11. Assign the user ACCESS AREAS.

See Table B–1 on page B–9 or press [ACCESS AREAS] to view the list of access areas.

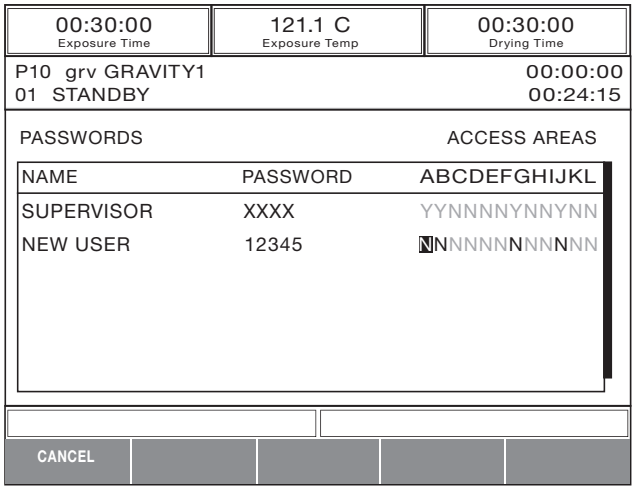
For each access area:

a. Use the left/right arrow keys to move from field to field.

b. Press ENTER.

The cursor changes from solid to blinking and the softkey labels change as shown in Figure B–11.

FIGURE B–11. PASSWORDS SCREEN [CANCEL]



WS-0443 HC

c. Use the up/down arrow keys to change from N to Y, where N is No and Y is Yes.

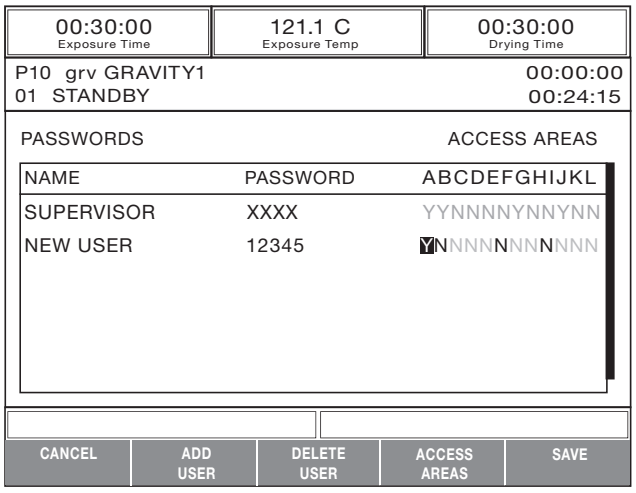
NOTE

To ignore your changes and return the field to its original value, press [CANCEL]. The cursor stops blinking.

d. Press ENTER to accept the ACCESS AREAS parameter.

The softkey labels change on the PASSWORDS screen as shown in Figure B–12.

FIGURE B–12. PASSWORDS SCREEN



WS-0444 HC

12. Press [SAVE].

The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen. See "Setting Up the Display Panel" on page B–49.

13. Press [YES].

14. Press [CANCEL] or [HOME] to exit the PASSWORDS screen.

    [CANCEL] displays the System Menu, and [HOME] displays the Process screen.

CHANGING USER ACCESS AREAS

To change a user's access areas:

1. Press [SETUP].

PASSWORD SETUP

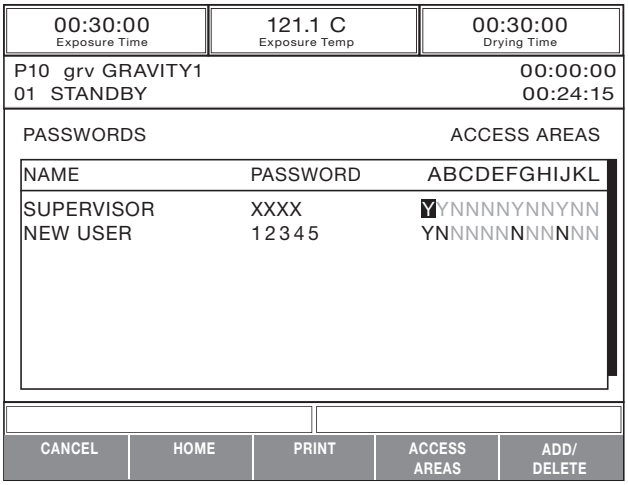
ACCESS REQUIRED

2. Select SYSTEM MENU > enter password > PASSWORDS.

3. Press ENTER.

   The PASSWORDS screen displays.

FIGURE B–13. PASSWORDS SCREEN



WS-0438 HC

4. Use the up/down arrow keys to move the cursor to the line displaying the user whose access areas you want to change.

5. Change the user ACCESS AREAS. For each access area:

   a. Use the left/right arrow keys to move from field to field.

   b. Press ENTER.

      The cursor changes from solid to blinking and the softkey labels change.

   c. Use the up/down arrow keys to change from N to Y or Y to N, where N is No and Y is Yes.

   d. Press ENTER to accept the ACCESS AREAS parameter.

6. Press [SAVE].

   The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen. See "Setting Up the Display Panel" on page B–49.

7. Press [YES].

8. Press [CANCEL] or [HOME] to exit the PASSWORDS screen.

   [CANCEL] displays the System Menu, and [HOME] displays the Process screen.

CHANGING A USER PASSWORD

To change a user's password:

1. Press [SETUP].

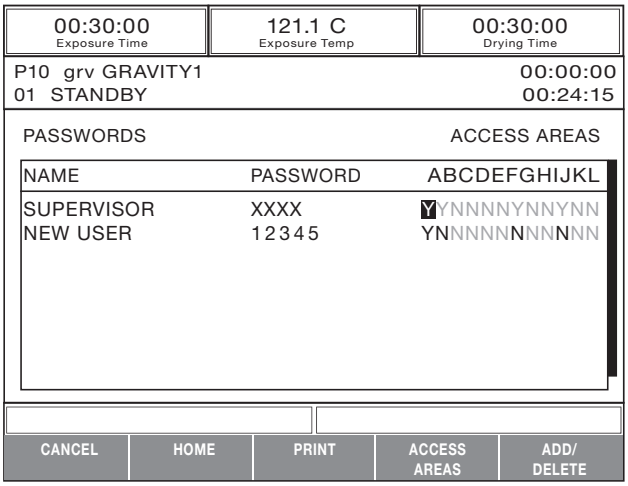
PASSWORD SETUP
ACCESS REQUIRED

2. Select SYSTEM MENU > enter password > PASSWORDS.

3. Press ENTER.

   The PASSWORDS screen displays.

FIGURE B–14. PASSWORDS SCREEN



WS-0438 HC

4. Use the arrow keys to select the user password.

5. Press ENTER.

   The ENTER PASSWORD screen displays.

6. Enter the new user password.

   a. Use the arrow keys to select the first character.

   b. Press ENTER.

   c. Repeat steps a and b for each additional character or number.

NOTE

A password must be 3–6 characters in length, contains only letters and numbers, and is not case sensitive.

NOTE

The characters entered appear to the left of the cursor.

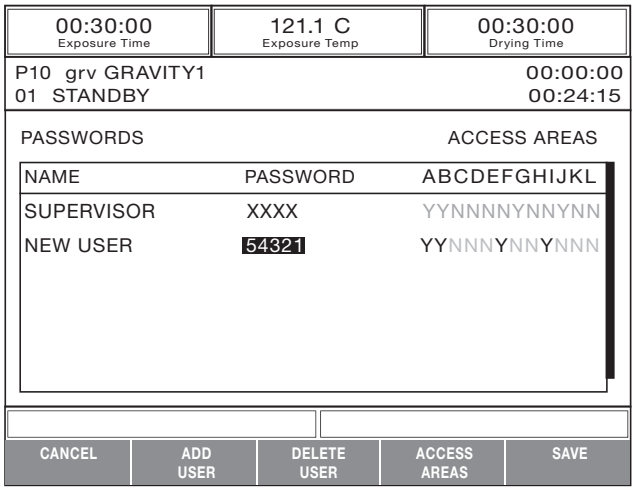
If you make a mistake, press [DELETE] to erase the last character.

The software does not allow entering a duplicate password. If the password being entered duplicates an existing password, the cursor moves to the first character position, no characters display, and the system waits for another unique password to be entered.

d. Press [OK].

The PASSWORDS screen displays with the new password highlighted.

FIGURE B–15. PASSWORDS SCREEN



WS-0439 HC

NOTE

Press [CANCEL] while changing a password and the old password is restored.

7. Press [SAVE].

   The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen. See “Setting Up the Display Panel” on page B–49.

8. Press [YES].

9. Press [CANCEL] or [HOME] to exit the PASSWORDS screen.

   [CANCEL] displays the System Menu, and [HOME] displays the Process screen.

DELETING A USER ACCOUNT

To delete a user's account:

1. Press [SETUP].

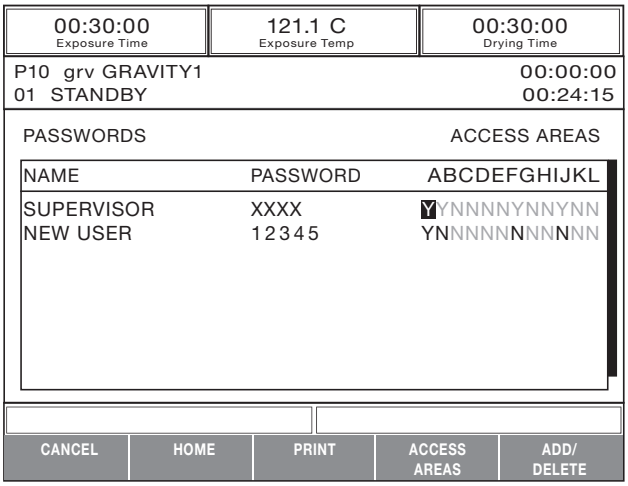
PASSWORD SETUP
ACCESS REQUIRED

2. Select SYSTEM MENU > enter password > PASSWORDS.

3. Press ENTER.

   The PASSWORDS screen displays.

FIGURE B–16. PASSWORDS SCREEN

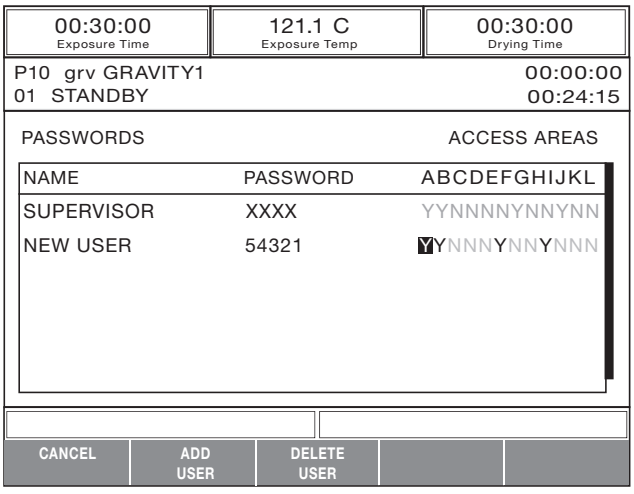


WS-0438 HC

4. Use the up/down arrow keys to select the line with the user information to be deleted.

5. Press [ADD/DELETE].

FIGURE B–17. PASSWORDS SCREEN



WS-0440 HC

6. Press [DELETE USER].

   The user name, its password, and its access areas are deleted.

7. Repeat step 4 through step 6 to remove multiple user accounts.

8. Press [SAVE].

   The CONFIRM SAVE? YES OR NO prompt displays.

NOTE
If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen. See "Setting Up the Display Panel" on page B–49.

9. Press [YES].

10. Press [CANCEL] or [HOME] to exit the PASSWORDS screen.

    [CANCEL] displays the System Menu, and [HOME] displays the Process screen.

PROCEDURES

EDITING CYCLE PARAMETERS

Cycle parameters vary depending on the selected cycle and can be edited by users with Parameter Settings password access.

NOTE
If an exposure time or temperature value below the fixed Parameter Check limit is entered, the message LOW CYCLE VALUES displays in red on the left side of the screen and ENTER TO EDIT displays in blue on the right side of the screen. See "Changing the Parameter" on page B–30.

The parameter edit default is quick edit. The default can be changed to full edit. See "Setting Up the Display Panel" on page B–49.

Quick Edit:

- Exposure time, exposure temperature, and drying time are the adjustable parameters most likely to be edited. Therefore, these cycle parameters can be edited when you enter the Quick Edit Parameters screen. For detailed instructions, see "Quick Editing Exposure Temp, Exposure Time, and Drying Time" on page B–21.
- All other adjustable parameters are listed on the EDIT PARAMETERS screen; [MORE PARAMS] must be pressed to edit them. For detailed instructions see "Quick Editing All Adjustable Parameters" on page B–24.

Full Edit:

- Full edit allows changes to adjustable parameters in cycles using the EDIT PARAMETERS screen. See “Full Edit” on page B–27 to change the adjustable parameters.

QUICK EDITING EXPOSURE TEMP, EXPOSURE TIME, AND DRYING TIME

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

To edit the exposure temperature, the exposure time, and the drying time parameters:

1. Press [PARAMETER].

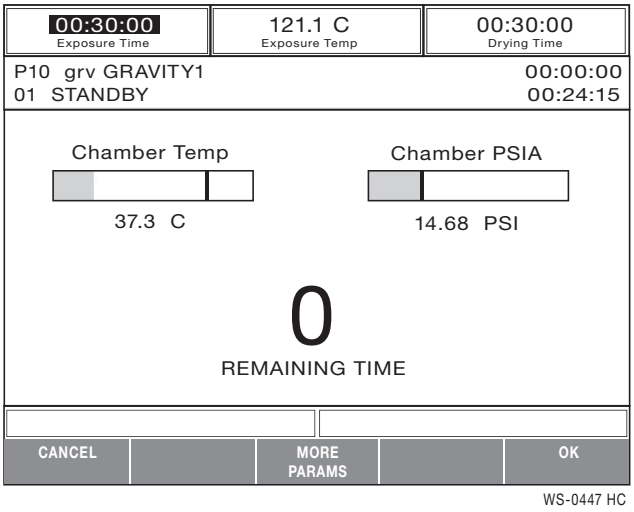
   The ENTER PASSWORD screen displays.

PARAMETER SETTINGS
ACCESS REQUIRED

2. Enter your password. See “Entering a Password” on page B–2.

   The Quick Edit Parameters screen displays with the Exposure Time highlighted (top left parameter on the screen).

FIGURE B–18. QUICK EDIT PARAMETERS SCREEN



3. Using the left/right arrows, select the parameter you want to change (that is, Exposure Time, Exposure Temp, or Drying Time).

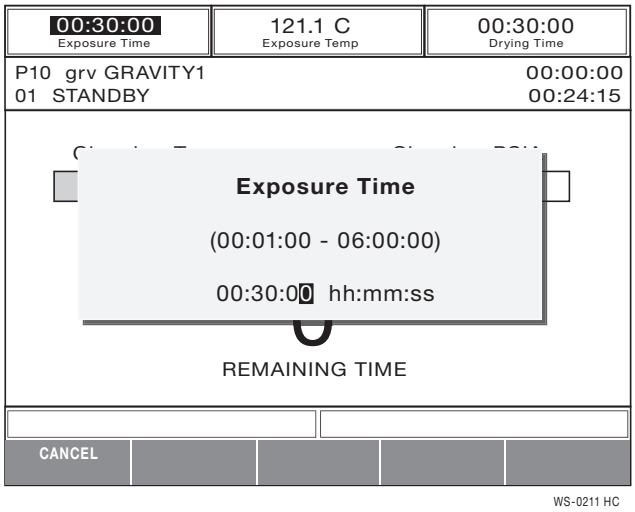
4. Press ENTER.

   The Edit Parameters dialog box displays the parameter name, a range of possible values (shown within parentheses), and the current setting.

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

FIGURE B–19. EDIT PARAMETERS DIALOG BOX



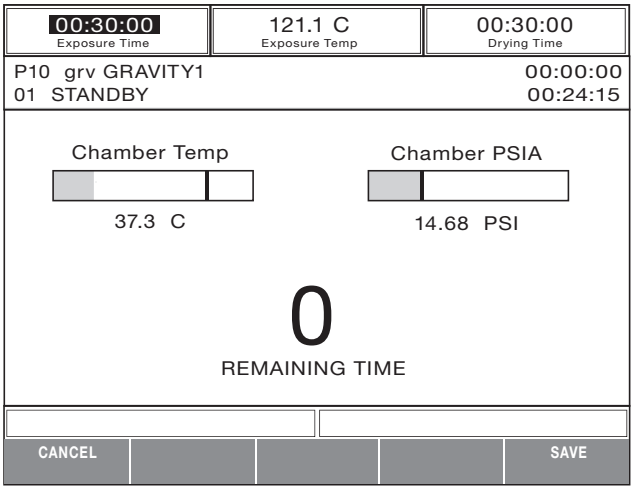
5. Use the left/right arrows to select the field.

6. Use the up/down arrows to change the value.

7. Press ENTER.

   The Quick Edit Parameters screen displays. The parameter that changed is highlighted.

FIGURE B–20. QUICK EDIT PARAMETERS SCREEN



8. Change other adjustable parameters as necessary.

9. Press [SAVE].

NOTE

If an exposure time or temperature value below the fixed Parameter Check limit is entered, the message LOW CYCLE VALUES displays in red on the left side of the screen and ENTER TO EDIT displays in blue on the right side of the screen. See "Changing the Parameter" on page B–30.

The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen. See "Setting Up the Display Panel" on page B–49.

10. Press [YES].

11. Press [OK] when all changes to the adjustable parameters are made.

The Process screen displays.

QUICK EDITING ALL ADJUSTABLE PARAMETERS

To edit the cycle parameters:

1. Press [PARAMETER].

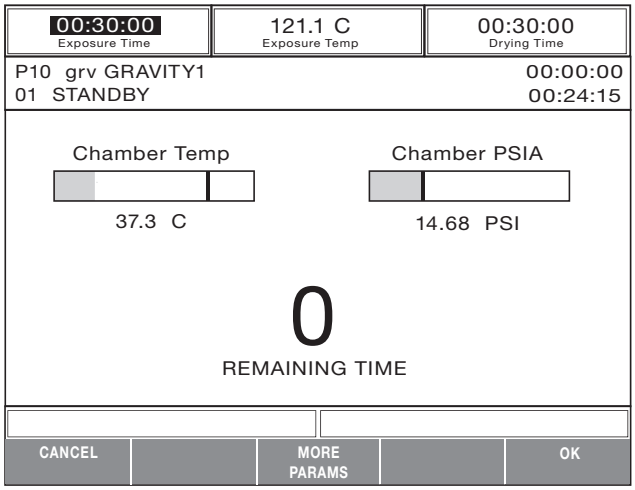
   The ENTER PASSWORD screen displays.

PARAMETER SETTINGS
ACCESS REQUIRED

2. Enter your password. See “Entering a Password” on page B–2.

   The Quick Edit Parameters screen displays with the Exposure Time highlighted (top left parameter on the screen).

FIGURE B–21. QUICK EDIT PARAMETERS SCREEN

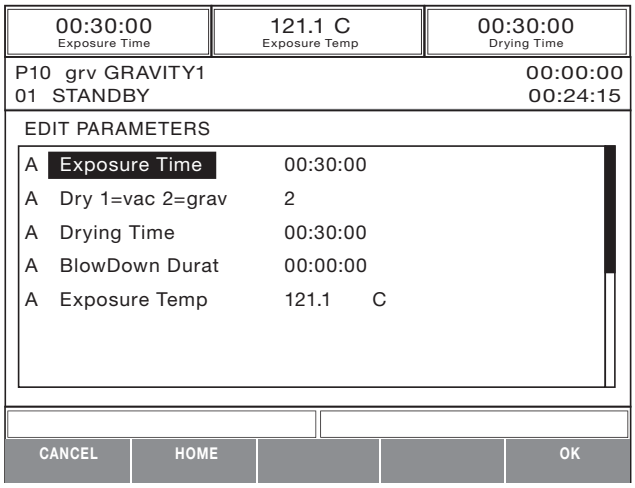


WS-0447 HC

3. Press [MORE PARAMS].

   The EDIT PARAMETERS screen displays with the first adjustable parameter highlighted.

FIGURE B–22. EDIT PARAMETERS SCREEN



4. Use the up/down arrows to select the parameter.

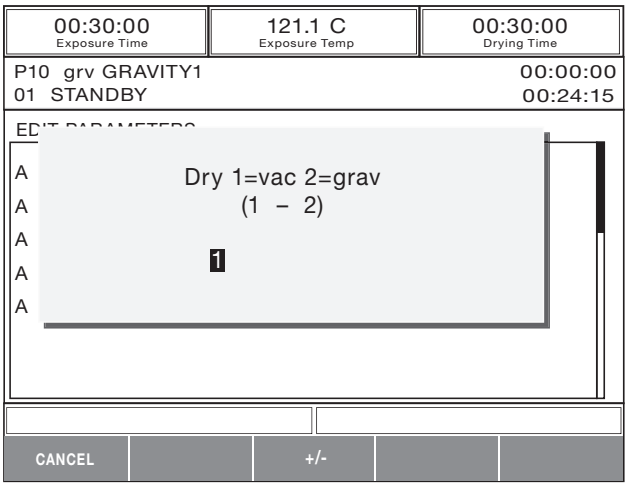
5. Press ENTER.

   The Edit Parameters dialog box displays the parameter name, a range of possible values shown within parentheses, and the current setting.

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

FIGURE B–23. EDIT PARAMETERS DIALOG BOX



WS-0018 HC

6. Use the left/right arrows to select the field.

7. Use the up/down arrows to change the value.

8. Press ENTER.

9. Press [SAVE].

NOTE

If an exposure time or temperature value below the fixed Parameter Check limit is entered, the message LOW CYCLE VALUES displays in red on the left side of the screen and ENTER TO EDIT displays in blue on the right side of the screen. See “Changing the Parameter” on page B–30.

The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen. See “Setting Up the Display Panel” on page B–49.

10. Press [YES].

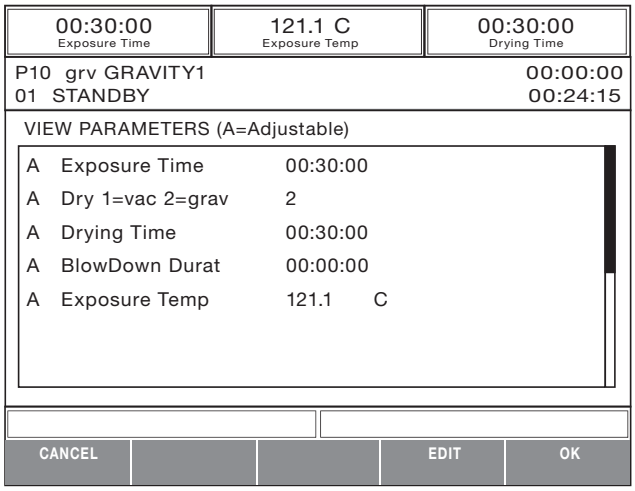
    The EDIT PARAMETERS screen displays. See Figure B–22 on page B–24.

11. Change other adjustable parameters as necessary.

12. Press [OK].

    The VIEW PARAMETERS screen displays.

FIGURE B–24. VIEW PARAMETERS SCREEN



13. Press [OK].

    The Process screen displays.

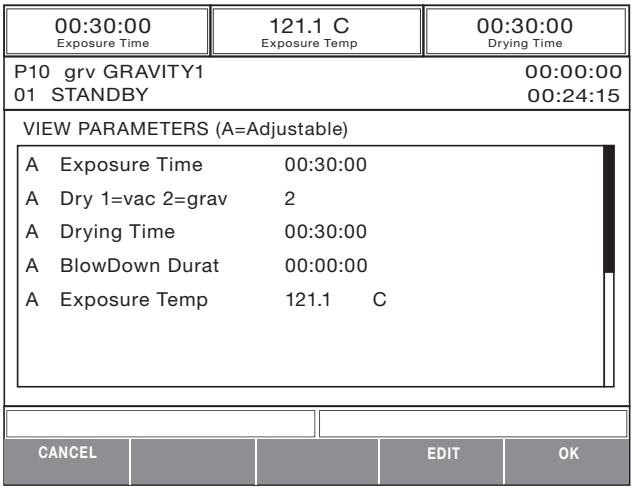
FULL EDIT

To edit cycle parameters using the full edit function:

1. Press [PARAMETER].

   The VIEW PARAMETERS screen displays.

FIGURE B–25. VIEW PARAMETERS SCREEN



WS-0552 HC

2. Press [EDIT].

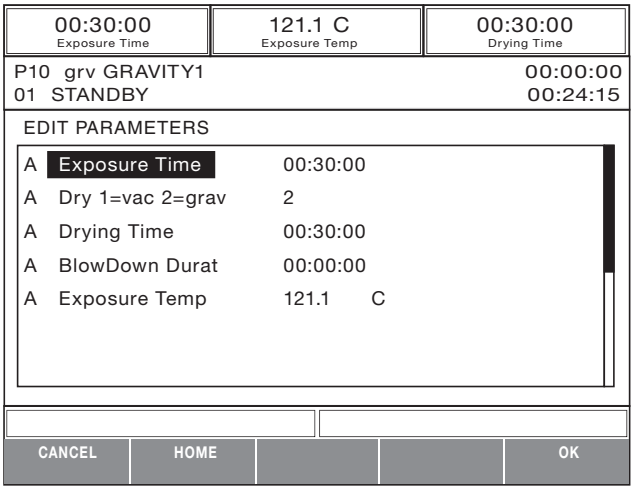
   The ENTER PASSWORD screen displays.

PARAMETER SETTINGS
ACCESS REQUIRED

3. Enter your password. See “Entering a Password” on page B–2.

   The EDIT PARAMETERS screen displays with the first adjustable parameter highlighted.

FIGURE B–26. EDIT PARAMETERS SCREEN



WS-0551 HC

4. Use the up/down arrows to select the parameter.

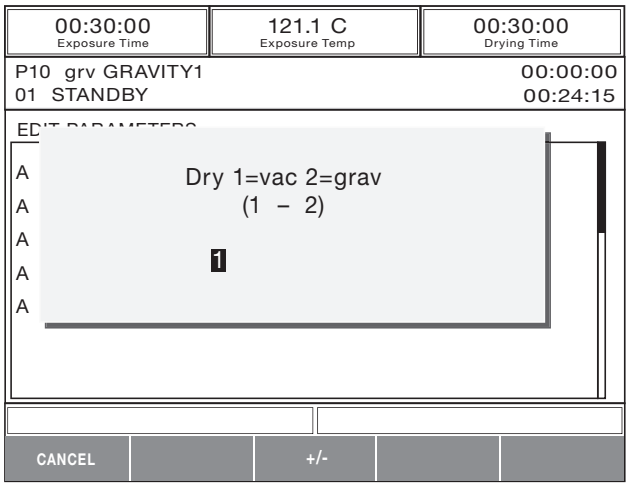
5. Press ENTER.

   The Edit Parameters dialog box displays the parameter name, a range of possible values shown within parentheses, and the current setting.

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

FIGURE B–27. EDIT PARAMETERS DIALOG BOX



WS-0018 HC

6. Use the left/right arrows to select the field.

7. Use the up/down arrows to change the value.

8. Press ENTER.

9. Change other adjustable parameters as necessary.

10. Press [SAVE].

NOTE

If an exposure time or temperature value below the fixed Parameter Check limit is entered, the message LOW CYCLE VALUES displays in red on the left side of the screen and ENTER TO EDIT displays in blue on the right side of the screen. See “Changing the Parameter” on page B–30.

The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen. See “Setting Up the Display Panel” on page B–49.

11. Press [YES].

    The EDIT PARAMETERS screen displays. See Figure B–26 on page B–27.

12. Change other adjustable parameters as necessary, pressing [SAVE] after each change.

13. Press [OK].

    The VIEW PARAMETERS screen displays. See Figure B–25 on page B–27.

14. Press [OK].

    The Process screen displays.

PARAMETER CHECK

WARNING
RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

The parameter check feature is used to verify that the selected exposure time and exposure temperature settings are within an allowable range for the cycle type. This feature is intended to act as a double check and a backup for the primary parameter verification performed by the Supervisor.

NOTE
Parameter check is not designed or intended to alleviate qualified personnel from their responsibility to select and verify that the cycle parameter selections are correct for the application.

Parameter check values cannot be adjusted.

If a value is entered that is below the fixed parameter check value, the message *ENTER TO EDIT* displays in blue on the right side of the screen for 5 seconds and *LOW CYCLE VALUES* displays in red on the left side of the screen until any of the following occur:

- A value within the set value range is entered and saved.
- The door is actuated (displays again when the door action is complete).
- The cycle is started.
- Another cycle is selected with settings within an allowable range for the cycle type.

CHANGING THE PARAMETER

1. If NOT in edit mode:
   a. Press [PARAMETER].
   b. If the edit mode is full, press [EDIT].
   c. Enter the password.
2. Scroll to Exposure Time or Exposure Temp.
3. Press ENTER.

4. Use the left/right arrows to select the field.

5. Use the up/down arrows to change the value.

6. Press ENTER.

7. Press [SAVE].

NOTE
The SAVE operation evaluates the values and determines if low cycle values are present.

8. If the low cycle message displays again, do one of the following:
   - Do step 2 through step 4 until the message clears.

     The *LOW CYCLE VALUES* message clears when the parameter check value is above the fixed parameter check value and the parameter is saved.
   - Make a determination to run the cycle with low cycle values. See “Running a Cycle with Low Cycle Values” below.

RUNNING A CYCLE WITH LOW CYCLE VALUES

NOTE
The parameter can be saved with a low cycle value.

The parameter check feature can be disabled by a qualified Getinge USA service representative.

1. Select the cycle.

   See “Previewing and Selecting a Cycle” on page 4–3.

   LOW CYCLE VALUES displays in the bottom left field on the screen.

2. Press START.

   The error message clears from the screen, is printed, and added to the error log.

   When the cycle is completed, the actual parameter check value is printed within the CYCLE RESULTS section after CYCLE COMPLETE is printed.

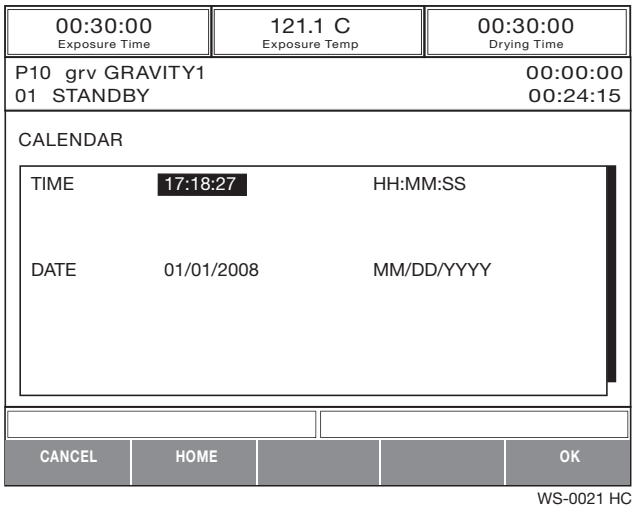
SETTING THE CLOCK AND CALENDAR

To set the date and time:

TIME SETTINGS
ACCESS REQUIRED

1. Press [SETUP].
2. Select SYSTEM MENU > enter password > TIME SETTINGS > CALENDAR.
3. Press ENTER.

FIGURE B–28. CALENDAR SCREEN



WS-0021 HC

NOTE

The date format can be changed. See “Selecting the Language, Date Format, and Units” on page B–46.

4. Use the up/down arrows to select the TIME or DATE field.
5. Press ENTER.
6. Use the up/down arrows to increase or decrease the value within the field.
7. Use the left/right arrows to select the field.

8. Press ENTER.
9. Make changes to other fields as necessary by repeating step 4 through step 8.
10. When all changes are made, press [SAVE].

    The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen (see "Setting Up the Display Panel" on page B–49).

11. Press [YES].
12. Press [OK].

    The Time Settings menu displays.
13. Press [HOME].

    The Process screen displays.

SETTING UP THE AUTO BLOW-DOWN

The alarm clock function controls the time the auto blow-down begins on a sterilizer equipped with a steam boiler.

NOTE

Alarm clock uses a 24-hour clock (military time).

Times can be enabled on a day-to-day basis.

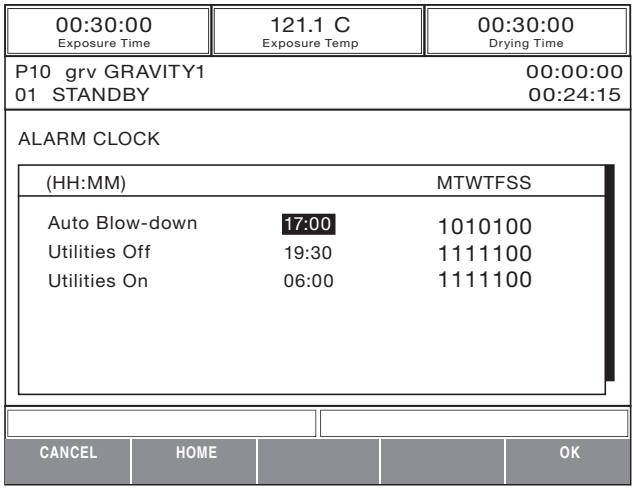
To set the auto blow-down time:

1. Press [SETUP].
2. Select SYSTEM MENU > enter password > TIME SETTINGS > ALARM CLOCK.

3. Press ENTER.

   The ALARM CLOCK screen displays with the auto blow-down time highlighted.

FIGURE B–29. ALARM CLOCK SCREEN



WS-0449 HC

4. Press ENTER.

5. Enter the desired auto blow-down time.
   - Use the up/down arrows to change the numeric value in a field.
   - Use the left/right arrows to select the field.

6. Press ENTER.
7. Select Monday (M).

8. Press ENTER.

9. Use the up/down arrows to enable (1) or disable (0) auto blow-down for that day.

10. Press ENTER.

11. Use the left/right arrows to select the next day of the week.

    The parameter displays highlighted and blinking.

12. Repeat step 8 through step 11 for each parameter.
13. Press [SAVE].

    The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen (see "Setting Up the Display Panel" on page B–49).

14. Press [YES].

15. Press [OK].

    The Time Settings menu displays.

16. Press [HOME].

    The Process screen displays.

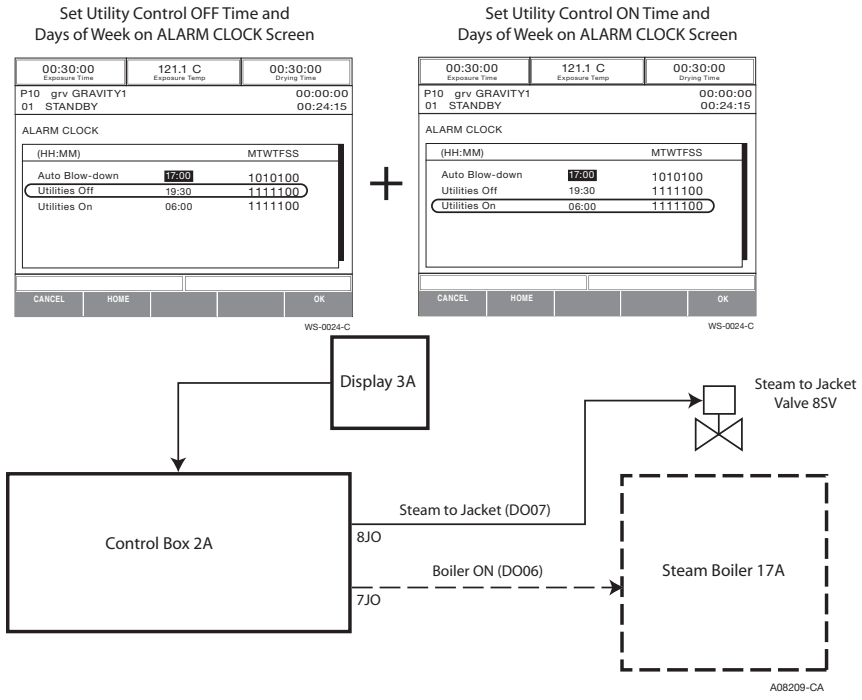
SETTING UP THE UTILITIES ON AND OFF TIMES

The utilities control feature turns the boiler and steam supply to the sterilizer jacket on and off at a scheduled time each day. The programmable timer can be programmed for up to 14 events (e.g., the utilities can be turned on and off at a different time each day of the week).

NOTE

If a cycle is in progress at the alarm time, utility shutdown occurs when the cycle ends.

FIGURE B–30. UTILITIES CONTROL TIMER



NOTE

The utility shutdown feature can be bypassed (for a single cycle) from the control panel of the sterilizer (see “Bypassing Utility Shutdown Mode” on page B–38).

The utilities control timer does not shut off electrical power to the sterilizer.

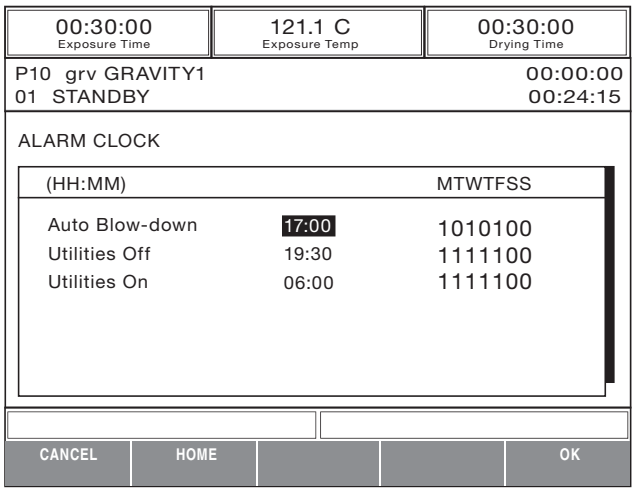
To set the utility control ON and OFF times:

TIME SETTINGS
ACCESS REQUIRED

1. Press [SETUP].
2. Select SYSTEM MENU > enter password > TIME SETTINGS > ALARM CLOCK.
3. Press ENTER.

   The ALARM CLOCK screen displays with the auto blow-down time highlighted.

FIGURE B–31. ALARM CLOCK SCREEN



WS-0449 HC

4. Use the down arrow to select the Utilities Off time field.
5. Press ENTER.
6. Enter the desired Utilities Off time.
   - Use the up/down arrows to change the numeric value in a field.
   - Use the left/right arrows to select the field.

7. Press ENTER.
8. Select Monday (M).

9. Press ENTER.

10. Use the up/down arrows to enable (1) or disable (0) auto utility control for that day.

11. Press ENTER.

12. Use the left/right arrows to select the next day of the week.
13. Repeat step 9 through step 12 until all days are set.
14. Select the Utilities On time field.
15. Repeat step 5 through step 13 for the Utilities On times.

CAUTION

There can be only one Utilities On and one Utilities Off time each day and the ON time must be earlier than the OFF time. Once Utilities Off is activated, Utilities On cannot be activated until the next day.

16. Press [SAVE].

    The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen (see "Setting Up the Display Panel" on page B–49).

17. Press [YES].
18. Press [OK].

    The Time Settings menu displays.

19. Press [HOME].

    The Process screen displays.

BYPASSING UTILITY SHUTDOWN MODE

When utility shutdown is activated, the control panel shows UTILITY SHUTDOWN in the display. The user can bypass this mode in order to run a single cycle.

To bypass utility shutdown mode for one cycle:

1. Press START.

   Utility shutdown mode is bypassed.

   The sterilizer begins to warm up.

2. Press START to begin the cycle.

   The cycle runs to completion. The controls revert to UTILITY SHUTDOWN automatically.

EDITING THE CYCLE NUMBER

A user with configuration access privileges can change cycle numbers. When changes are made to the cycle assignments, use the “Cycle Assignments” worksheet on page B–42 to track the changes made.

CONFIGURATION

ACCESS REQUIRED

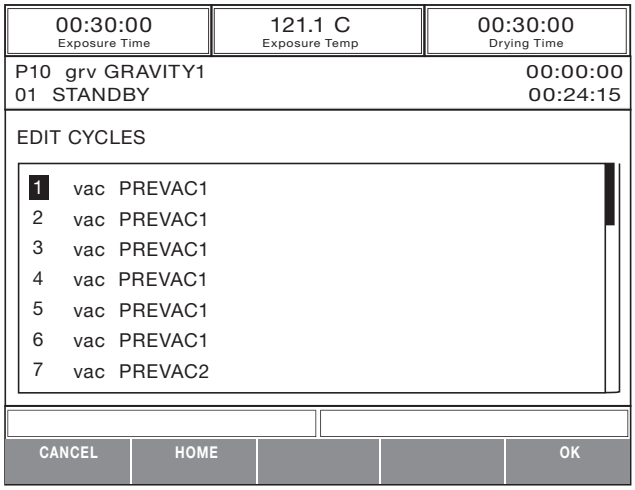
1. Press [SETUP].

2. Select SYSTEM MENU > enter password > CONFIGURATION > EDIT CYCLES.

3. Press ENTER.

   The EDIT CYCLES screen displays.

FIGURE B–32. EDIT CYCLES SCREEN



WS-0441 HC

4. Use the arrows to select the cycle number to be changed.

5. Press ENTER.

   The softkey labels change to CANCEL.

6. Use the arrows to enter the desired value.
   - If the value is one digit (0 through 9) use the up/down arrows to change the value.
   - If the value is two digits (10 through 64) use the left/right arrows to select the field and the up/down arrows to change the value.

7. Press ENTER.

8. Repeat step 4 through step 7 to change the cycle number of other cycles (as required).

NOTE
If two or more numbers are equal when [SAVE] is pressed, TWO OR MORE SEQ. NUMBERS EQUAL displays. Before pressing [SAVE], be sure to change one of the duplicate numbers.

9. When all changes are made, press [SAVE].

   The CONFIRM SAVE? YES OR NO prompt displays.

NOTE
If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen (see "Setting Up the Display Panel" on page B–49).

10. Press [YES].

11. Press [OK].

    The Configuration menu displays.

12. Press [CANCEL] or [HOME] to exit the Configuration menu.

    [CANCEL] displays the System Menu, and [HOME] displays the Process screen.

EDITING THE CYCLE NAME

A user with configuration access privileges can change cycle names. When changes are made to the cycle, use the "Cycle Assignments" worksheet on page B–42 to track the changes made.

CONFIGURATION

ACCESS REQUIRED

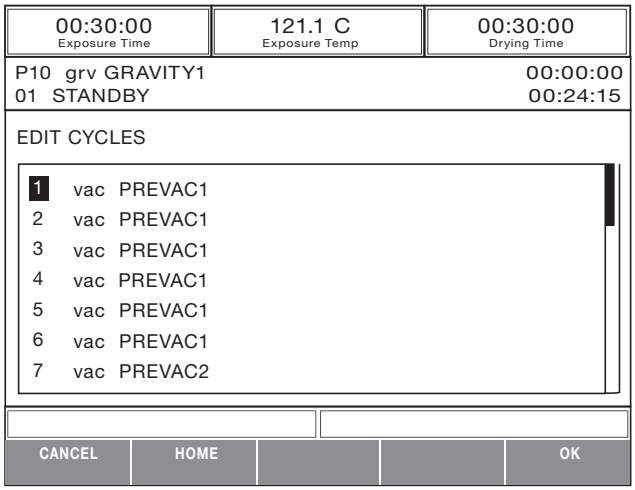
1. Press [SETUP].

2. Select SYSTEM MENU > enter password > CONFIGURATION > EDIT CYCLES.

3. Press ENTER.

   The EDIT CYCLES screen displays.

FIGURE B–33. EDIT CYCLES SCREEN



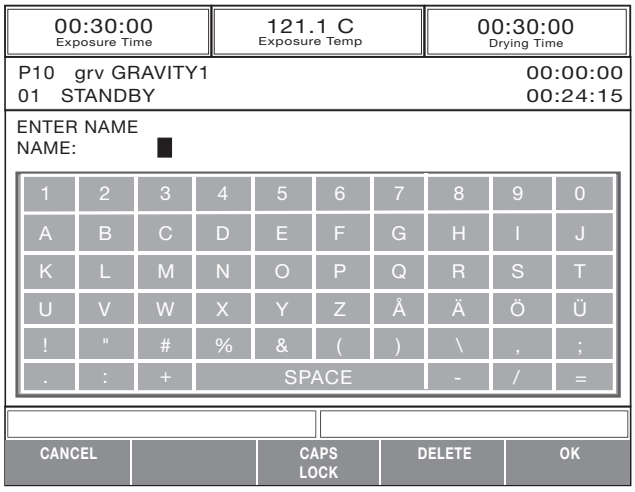
WS-0441 HC

4. Use the arrows to select the cycle name to be changed.

5. Press ENTER.

   The ENTER NAME screen displays.

FIGURE B–34. ENTER NAME SCREEN



ws-0150 HC

6. Enter the cycle name.

   a. Use the arrow keys to select the first alphanumeric character for the cycle name.

NOTE

The cycle type prefixes (vac, grv, f3, f10, lk, and liq) cannot be changed.

For readability, use a space before the name of the cycle.

[CANCEL] exits the screen without saving the cycle name.

[CAPS LOCK] changes the keyboard display between uppercase and lowercase alphabetic characters.

[DELETE] removes the character to the left of the cursor.

b. Press ENTER.

c. Repeat steps a and b until all the characters are entered.

d. Press [OK].

The EDIT CYCLES screen displays.

7. When all changes are made, press [SAVE].

   The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen (see "Setting Up the Display Panel" on page B–49).

8. Press [YES].

9. Press [OK].

   The Configuration menu displays.

10. Press [CANCEL] or [HOME] to exit the Configuration menu.

    [CANCEL] displays the System Menu, and [HOME] displays the Process screen.

CYCLE ASSIGNMENTS

COPY THESE 2 PAGES AND SAVE FOR REFERENCE.

The sterilizer comes from the factory with up to 22 pre-assigned cycles as shown in Table 4–1 on page 4–12 and Table 5–1 on page 5–2. The cycle number and name can be changed by a qualified person with configuration access privileges. When changes are made to the cycle assignments, write your setup in the form below.

TABLE B–2. CYCLE ASSIGNMENTS

Cycle Number	Cycle Type	Cycle Name (8 characters max.)	Comments

TABLE B–2. CYCLE ASSIGNMENTS

Cycle Number	Cycle Type	Cycle Name (8 characters max.)	Comments

Cycle type abbreviations:

- vac PREVAC 1, PREVAC 2, B & D TEST
- grv GRAVITY 1, GRAVITY 2
- liq LIQUIDS 1
- lk LEAK TEST
- f3 FLASH 3+
- f10 FLASH 10+

DATE: _____

ASSIGNING THE STERILIZER NAME

To assign the sterilizer name:

1. Press [SETUP].

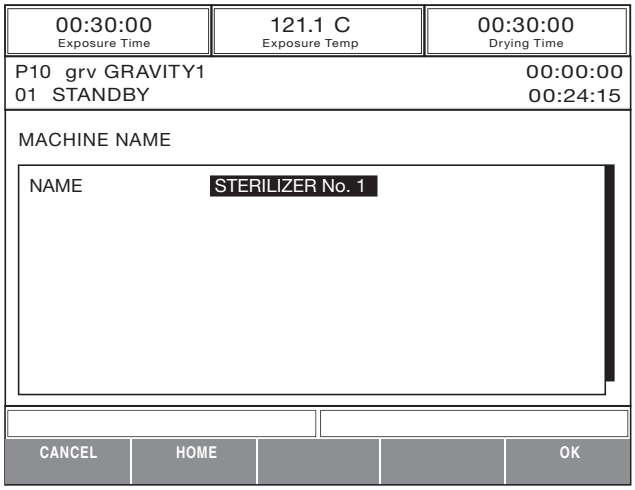
CONFIGURATION
ACCESS REQUIRED

2. Select SYSTEM MENU > enter password > CONFIGURATION > MACHINE NAME.

3. Press ENTER.

   The MACHINE NAME screen displays with the sterilizer name highlighted.

FIGURE B–35. MACHINE NAME SCREEN



WS-0030 HC

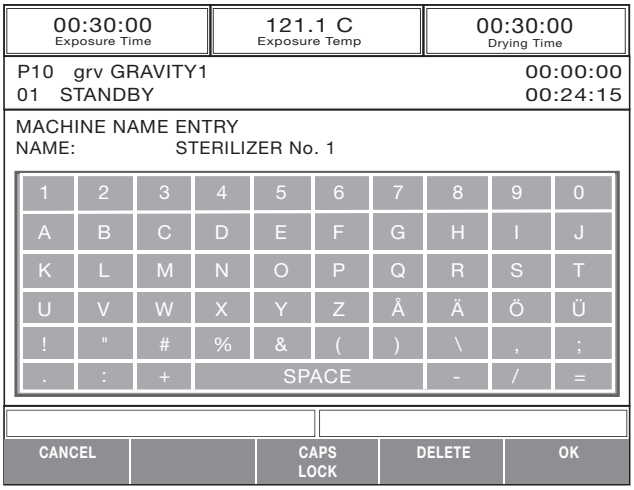
4. Press ENTER.

   The MACHINE NAME ENTRY screen displays.

NOTE

The machine name entered on this screen appears on the cycle printout.

FIGURE B–36. MACHINE NAME ENTRY SCREEN



WS-0020 HC

5. Use the arrow keys to select the first character.

6. Press ENTER to store the character.
7. Repeat step 5 and step 6 for each additional character.
8. Press [OK].

   The MACHINE NAME screen displays with the new sterilizer name highlighted.

9. Press [SAVE].

   The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen (see "Setting Up the Display Panel" on page B–49).

10. Press [YES].
11. Press [OK].

    The Configuration menu displays.

12. Press [HOME].

    The Process screen displays.

SELECTING THE LANGUAGE, DATE FORMAT, AND UNITS

To select the language, date format, pressure and temperature units:

1. Press [SETUP].

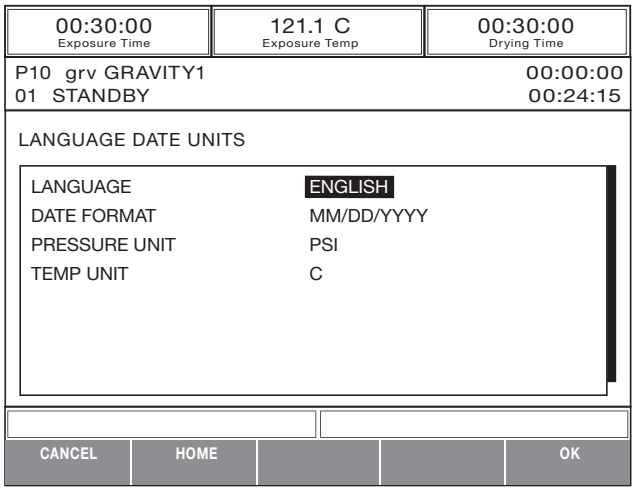
CONFIGURATION
ACCESS REQUIRED

2. Select SYSTEM MENU > enter password > CONFIGURATION > LANGUAGE DATE UNITS.

3. Press ENTER.

   The LANGUAGE DATE UNITS screen displays.

FIGURE B–37. LANGUAGE DATE UNITS SCREEN



WS-0019 HC

LANGUAGE

NOTE
The software is able to display in English, French, or Spanish.

4. Use the up or down arrow to select the LANGUAGE field (as required).

5. Press ENTER.

6. Use the up or down arrow to select the language.

7. Press ENTER.

DATE FORMAT

8. Use the up or down arrow to select the DATE FORMAT field.

9. Press ENTER.

10. Use the up or down arrow to select from the available date formats: MM/DD/YYYY, DD/MM/YYYY or YYYY/MM/DD.

11. Press ENTER.

PRESSURE UNIT

12. Use the up or down arrow to select the PRESSURE UNIT field.

13. Press ENTER.

14. Use the up or down arrow to select PSI, KPA, or BAR.

15. Press ENTER.

TEMPERATURE UNIT

16. Use the up or down arrow to select the TEMP UNIT field.

17. Press ENTER.

18. Use the up or down arrow to select F or C.

19. Press ENTER.

EXITING THE LANGUAGE DATE FORMAT UNITS SCREEN

When all the parameters are acceptable:

20. Press [SAVE].

    The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen (see "Setting Up the Display Panel" on page B–49).

21. Press [YES].

22. Press [OK].

    The Configuration menu displays.

23. Press [HOME].

    The Process screen displays.

SETTING UP THE DISPLAY PANEL

The display panel setup options include:

- default process screen (details, plot graph, or bar graph)
- parameter edit level (quick or full)
- screen saver delay
- save confirmation

To set up the display panel:

CONFIGURATION

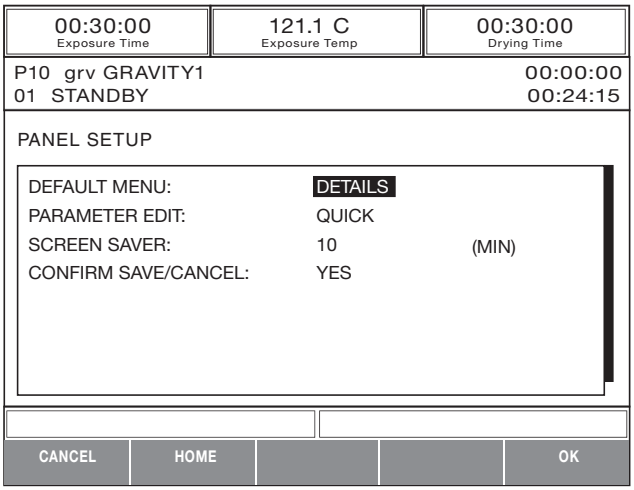
ACCESS REQUIRED

1. Press [SETUP].
2. Select SYSTEM MENU > enter password > CONFIGURATION > PANEL SETUP.

3. Press ENTER.

   The PANEL SETUP screen displays.

FIGURE B–38. PANEL SETUP SCREEN



WS-0424 HC

DEFAULT MENU

To select the default process screen:

4. Use the up or down arrow to select the DEFAULT MENU field.

5. Press ENTER.

   The softkey labels display CANCEL.

6. Use the up or down arrow to select DETAILS, PLOT GRAPH, or BAR GRAPH.

7. Press ENTER.

PARAMETER EDIT (QUICK OR FULL)

8. Use the up or down arrow to select the PARAMETER EDIT field.

9. Press ENTER.

10. Use the up or down arrow to select QUICK or FULL edit.

11. Press ENTER.

SCREEN SAVER

12. Use the up or down arrow to select the SCREEN SAVER field.

13. Press ENTER.

14. Use the arrows to select the screen saver delay value (in minutes with a maximum value of 99 minutes).

15. Press ENTER.

CONFIRM SAVE/CANCEL

16. Use the up or down arrow to select the CONFIRM SAVE/CANCEL field.

17. Press ENTER.

18. Use the up or down arrow to select YES or NO.

    The default is YES; when set to YES, the CONFIRM SAVE? YES OR NO prompt displays.

    When set to NO, the change takes effect after the setting is saved and no confirmation screen displays when changes are made to cycle or system parameters.

19. Press ENTER.

EXITING THE PANEL SETUP SCREEN

When all the parameters are acceptable:

20. Press [SAVE].

    The CONFIRM SAVE? YES OR NO prompt displays.

NOTE

If desired, the CONFIRM SAVE? prompt can be turned off by changing the CONFIRM SAVE/CANCEL setting on the PANEL SETUP screen (see "Setting Up the Display Panel" on page B–49).

21. Press [YES].

22. Press [OK].

    The Configuration menu displays.

23. Press [HOME].

    The Process screen displays.

VIEWING THE ABOUT SCREEN

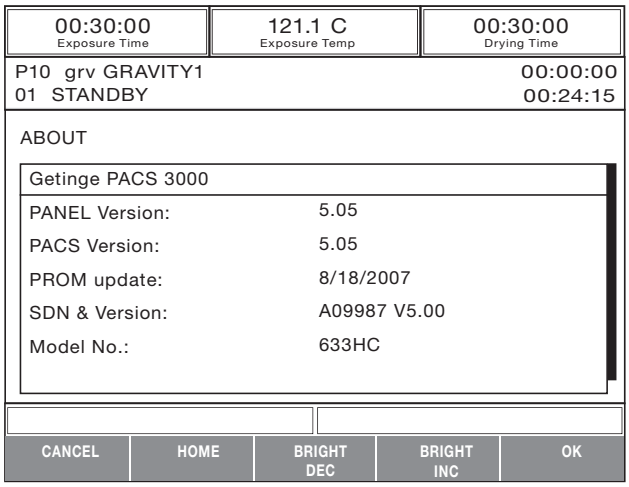
The ABOUT screen provides the software version and other important information about the sterilizer.

To view the ABOUT screen:

1. Press [SETUP].
2. Select ABOUT.
3. Press ENTER.

   The ABOUT screen displays.

FIGURE B–39. ABOUT SCREEN



WS-0035 633HC

ADJUSTING THE DISPLAY BRIGHTNESS

The ABOUT screen has two softkeys used for brightness adjustment.

1. To adjust the brightness of the display:
   - Press [BRIGHT INC] to increase the brightness.
   - Press [BRIGHT DEC] to decrease the brightness.

APPENDIX C PARAMETER CHECK FEATURE

WARNING

RISK OF NON-STERILE DEVICE: The sterilizer controls allow users to modify cycle settings, which may result in cycle parameters that do not achieve the desired sterility assurance level (SAL). Users with password access are responsible for validation of any cycles with settings other than the factory set parameters.

The 633HC Steam Sterilizer is shipped with the parameter check feature enabled. Each cycle has a minimum parameter check value that is based on factory set parameters. The parameter check is a calculation based on the exposure time and temperature selected. If the user selects a combination of the exposure time and the exposure temperature that represents a process lethality calculation less than the factory setting, *LOW CYCLE VALUES* appears in red and *ENTER TO EDIT* appears in blue at the bottom of the screen. For example, the parameter check value for a Prevac 1 cycle is 73.4; a 3 minute exposure at 275°F (135°C) is equivalent to 73.4 minutes (73:24) at 250°F (121.1°C).

If a combination of time and temperature represents a process lethality calculation less than the factory settings, a LOW CYCLE VALUES message is displayed.

NOTE

The LOW CYCLE VALUES condition does not prevent the cycle from starting. If the cycle is run without adjusting the cycle parameters, LOW CYCLE VALUES displays until the cycle is started. The message is printed when START is pressed.

The parameter check value is not adjustable.

ESTIMATING VALID CYCLE PARAMETERS

The graphs in this section provide a visual means of determining whether a specific cycle setting is above the parameter check limit.

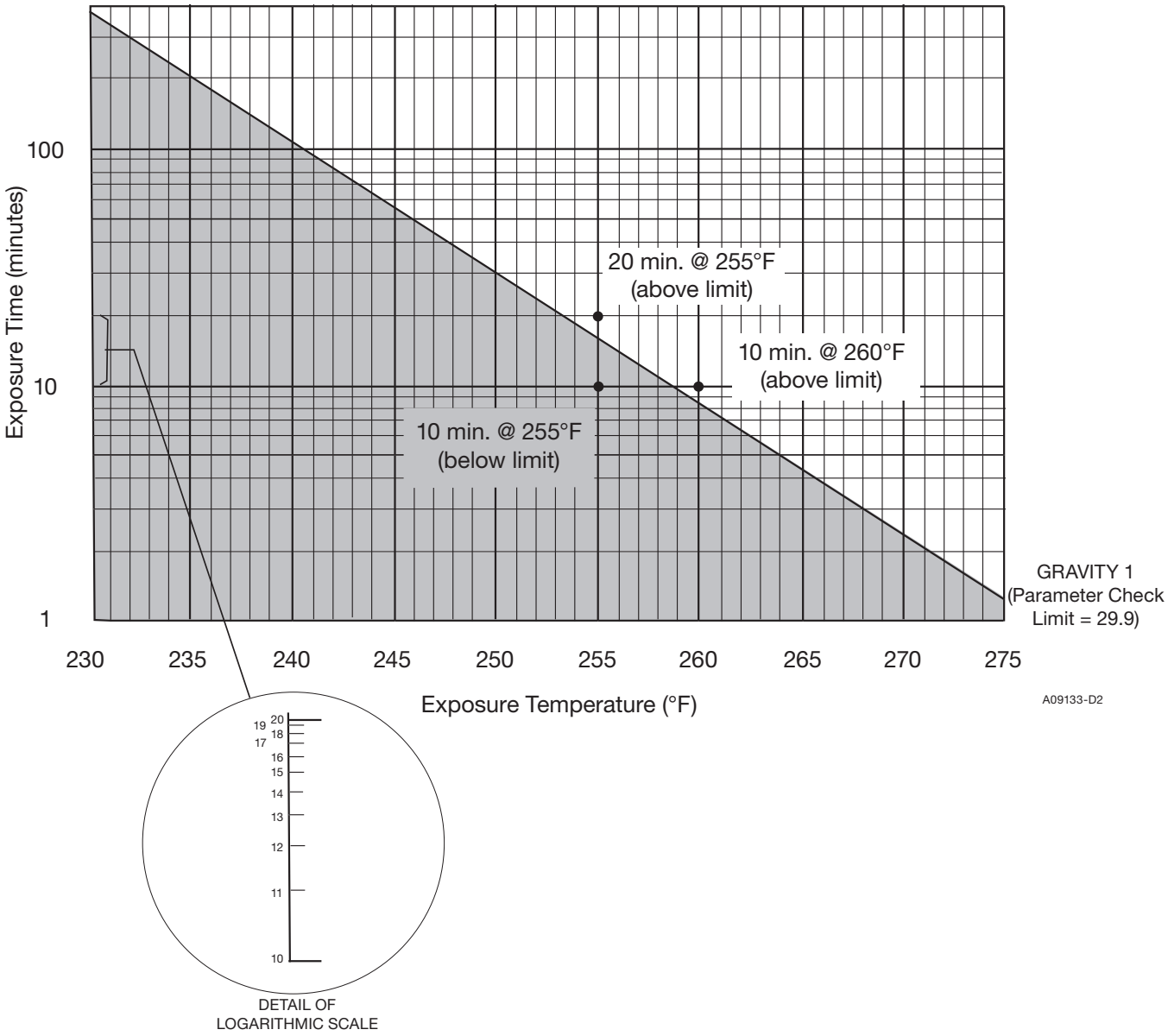
As an example, see Figure C–1 on page C–2. On the graph, exposure temperature is measured on the x-axis and exposure time on the y-axis. The parameter check limit for the Gravity 1 cycle is the solid diagonal line. The shaded area indicates cycle settings that result in a *LOW CYCLE VALUES* message.

NOTE

The y-axis (exposure time) is a logarithmic scale. The divisions on the y-axis are not evenly spaced. For example, the number 15 is not halfway between 10 and 20, but closer to 20 than to 10.

For example, selecting 10 minutes exposure at 255°F results in a *LOW CYCLE VALUES* message. To find an exposure time above the parameter check limit, follow the line (horizontally or vertically) until it crosses the diagonal. In this example, 20 minutes at 255°F or 10 minutes at 260°F are above the parameter check limit.

FIGURE C–1. PARAMETER CHECK EXAMPLE



Figures C–2 through C–7 are parameter check limit graphs for the gravity, flash, prevacuum, and liquids cycles respectively.

FIGURE C–2. GRAVITY 1 CYCLE

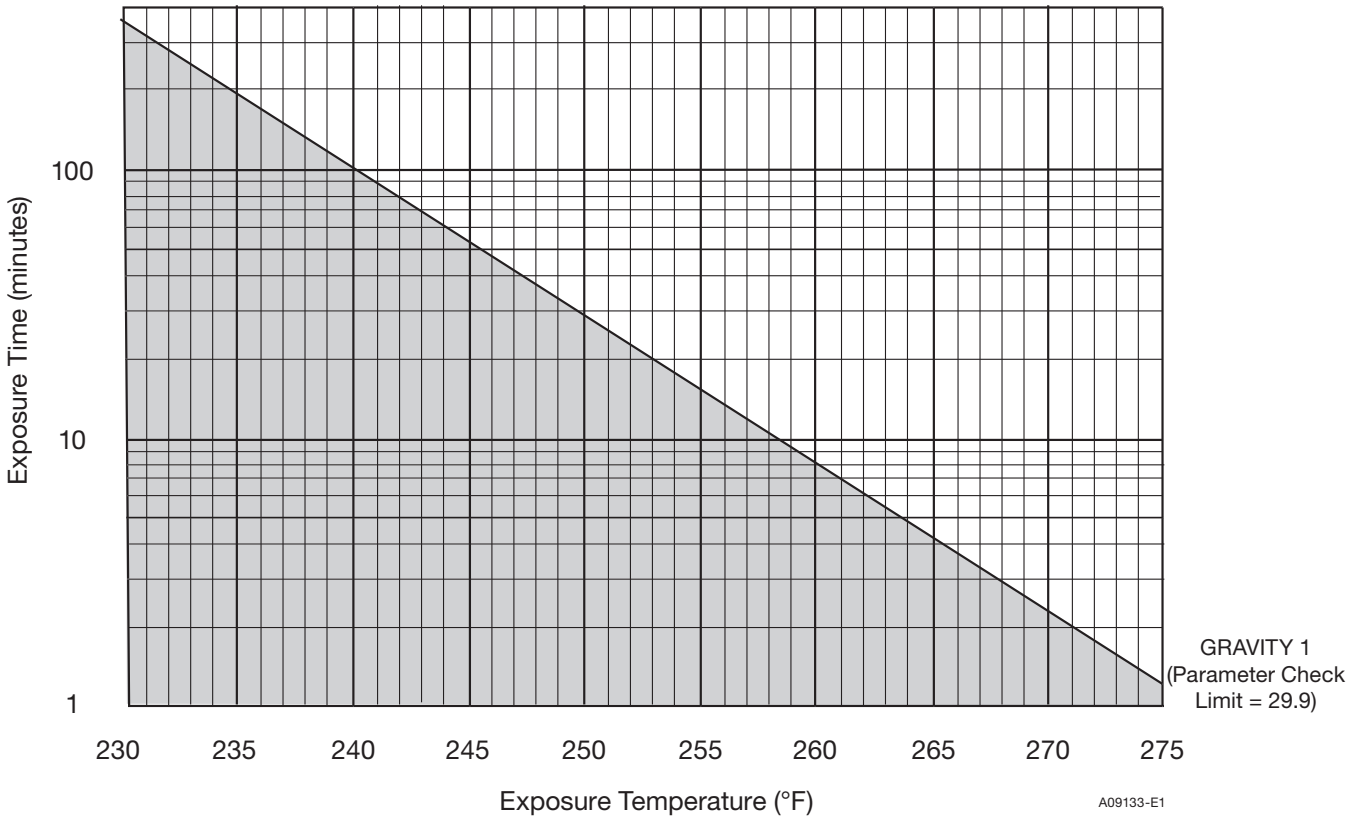


FIGURE C–3. GRAVITY 2 CYCLE

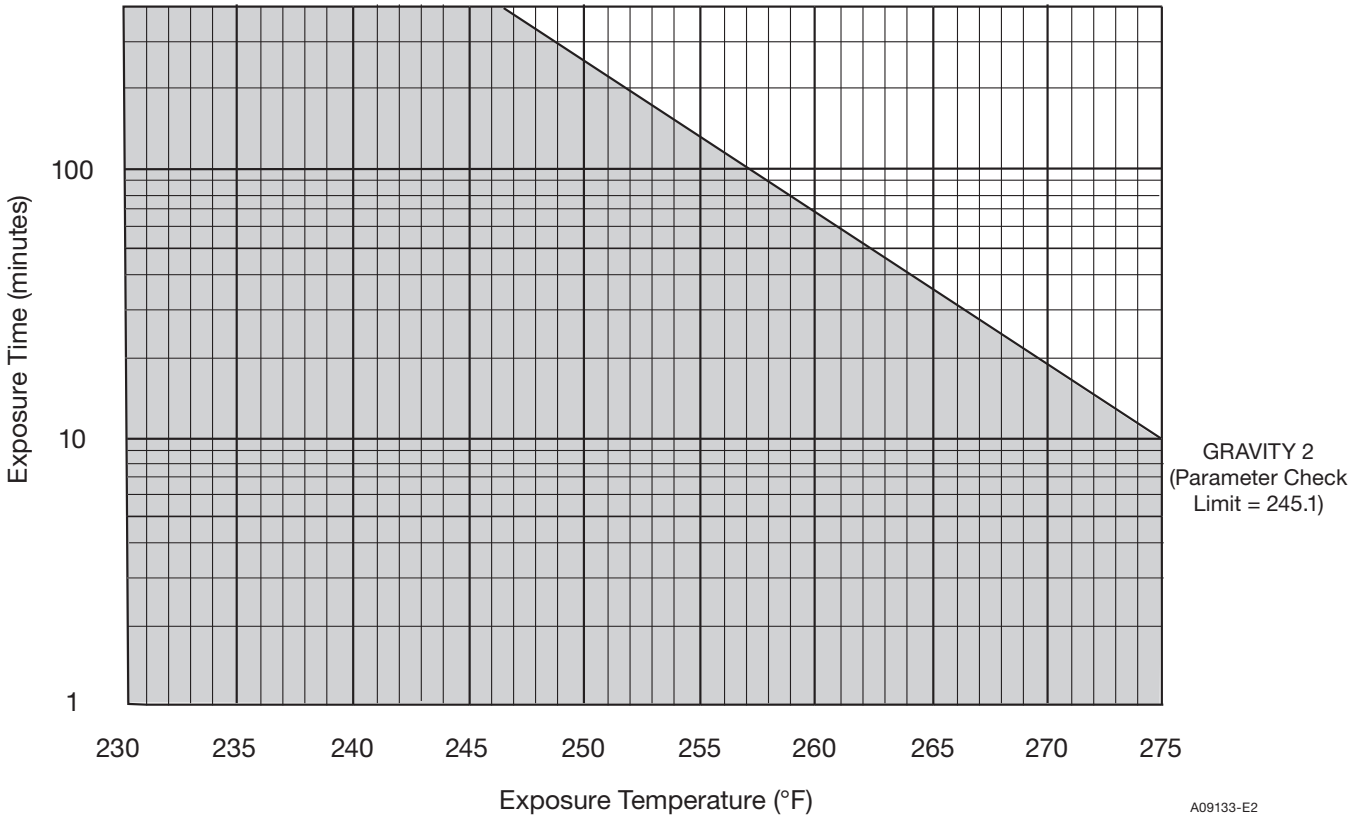


FIGURE C–4. FLASH 3+ CYCLE

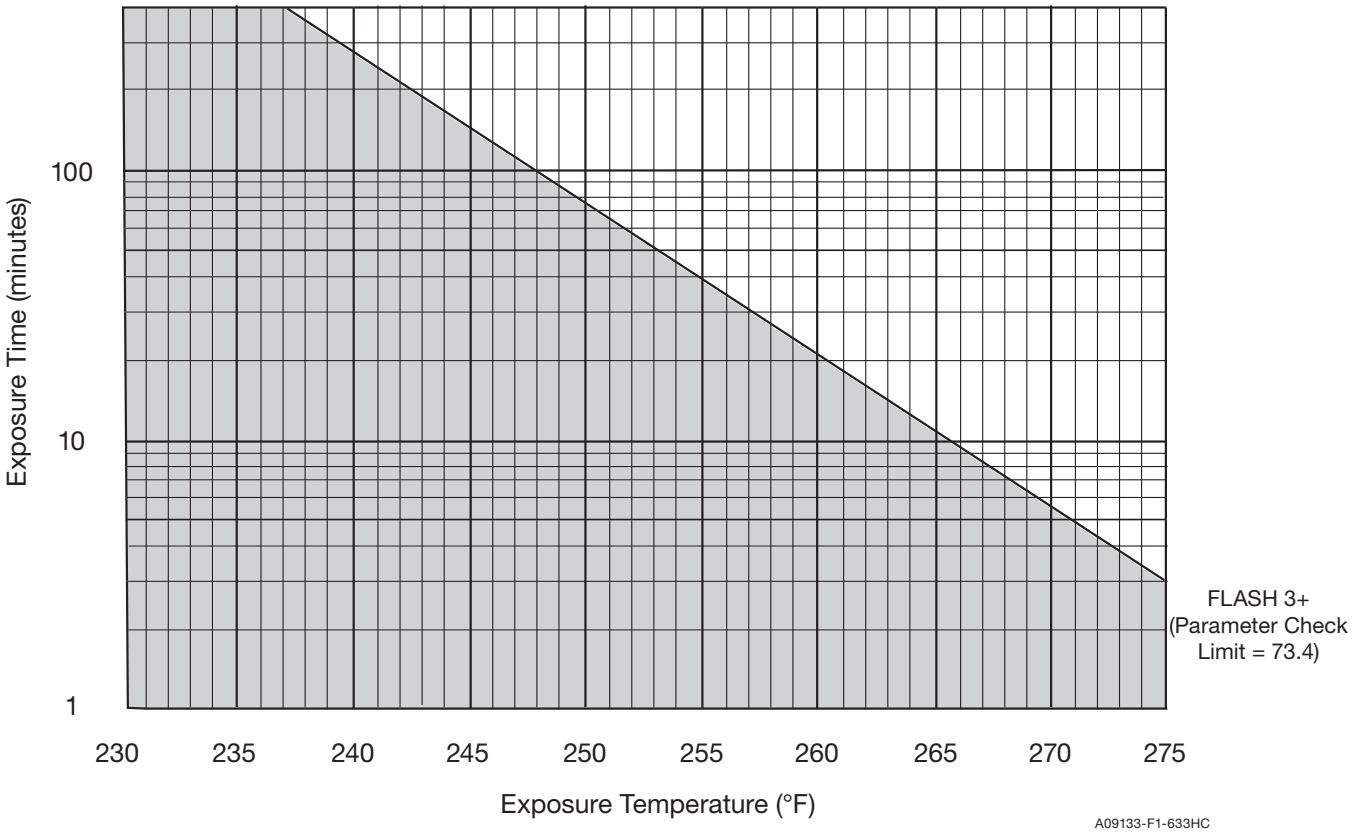


FIGURE C–5. FLASH 10+ CYCLE

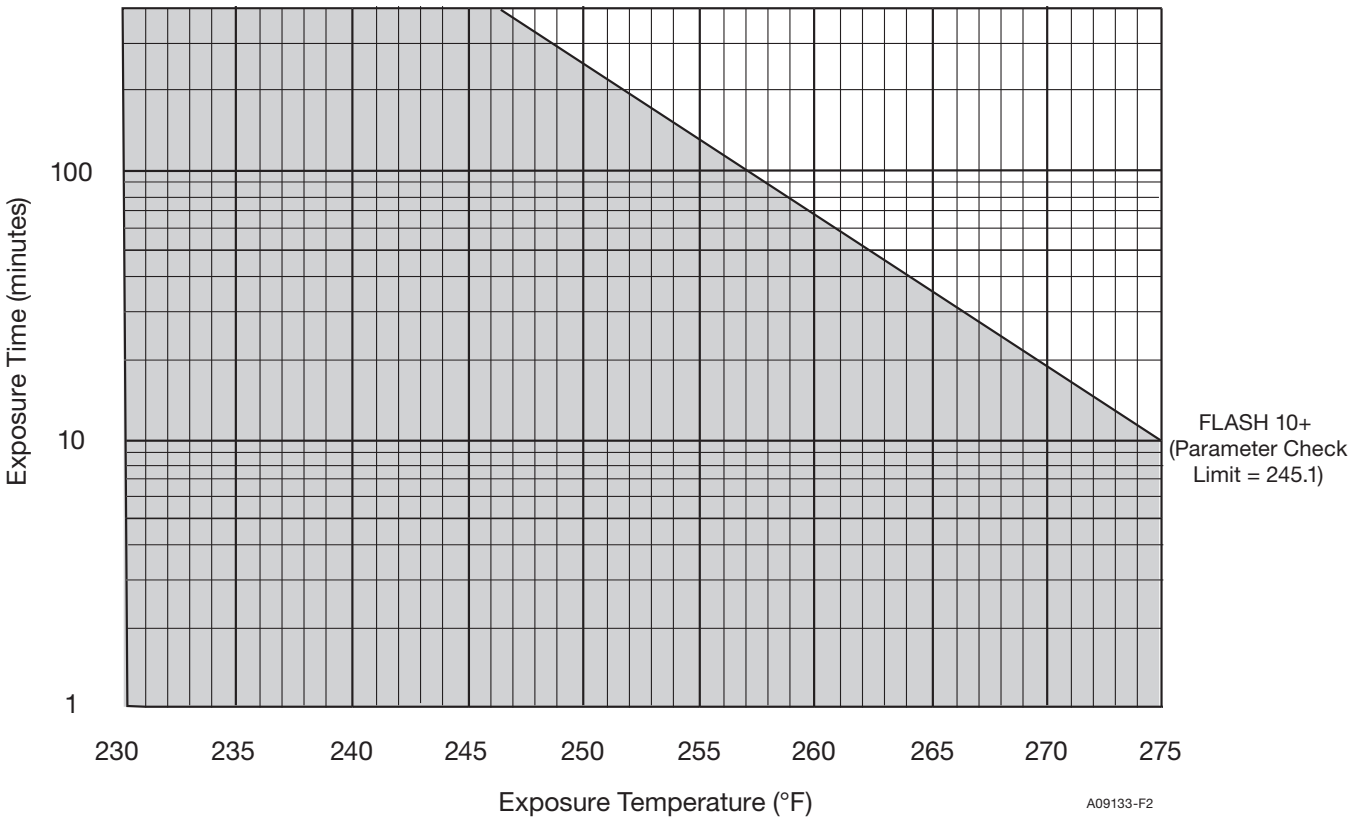


FIGURE C–6. PREVAC CYCLES

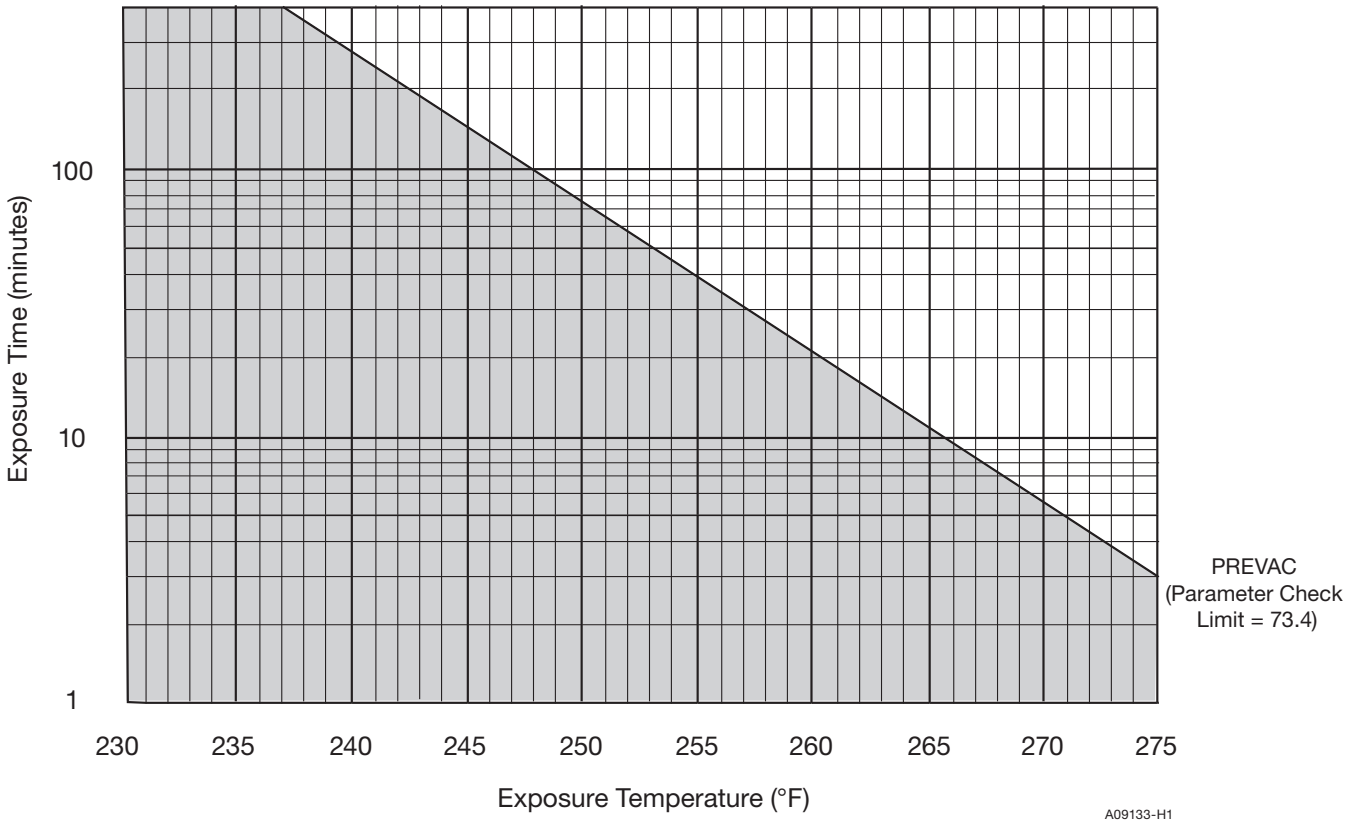


FIGURE C–7. LIQUIDS 1 CYCLE

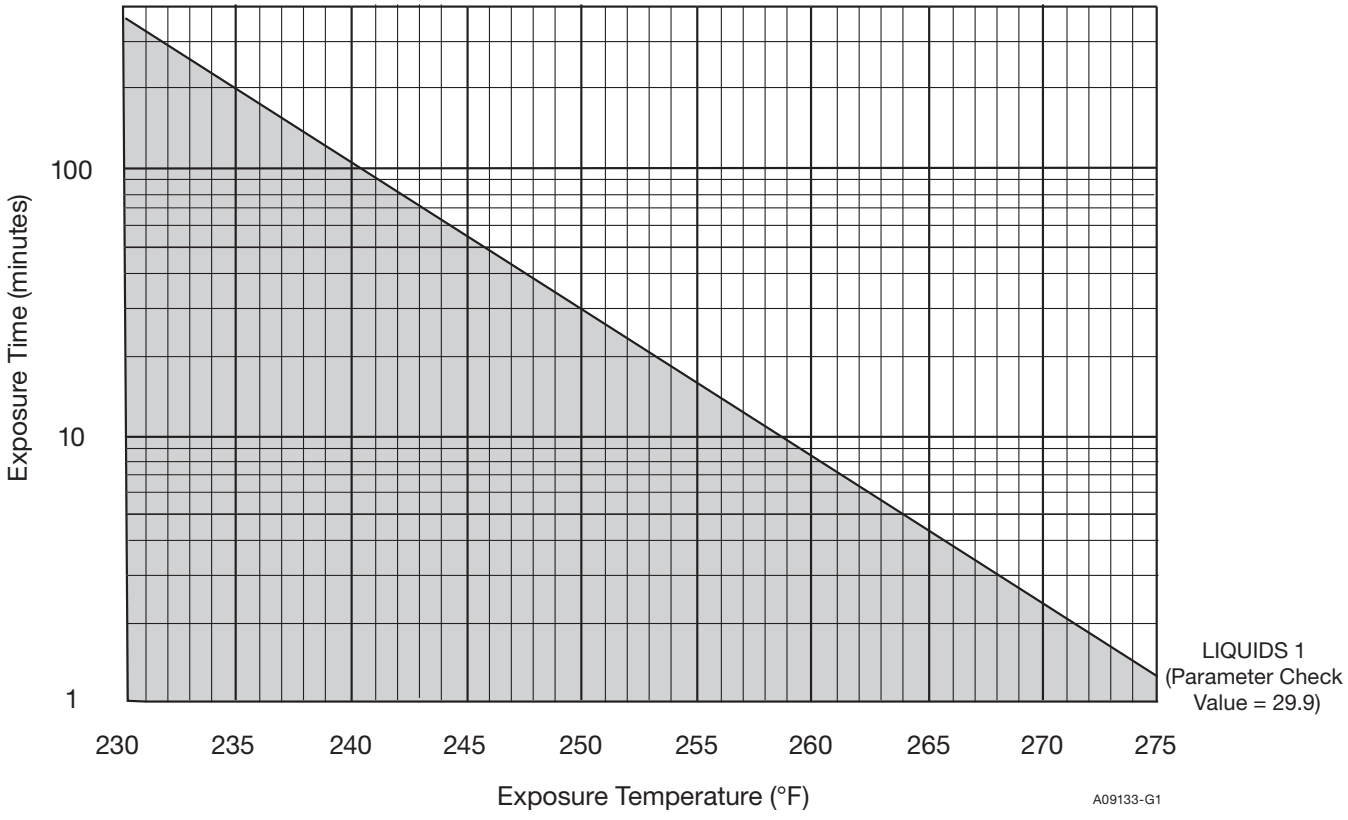


FIGURE D–1, SHEET 1. MENU TREE FOR THE 633HC STEAM STERILIZER

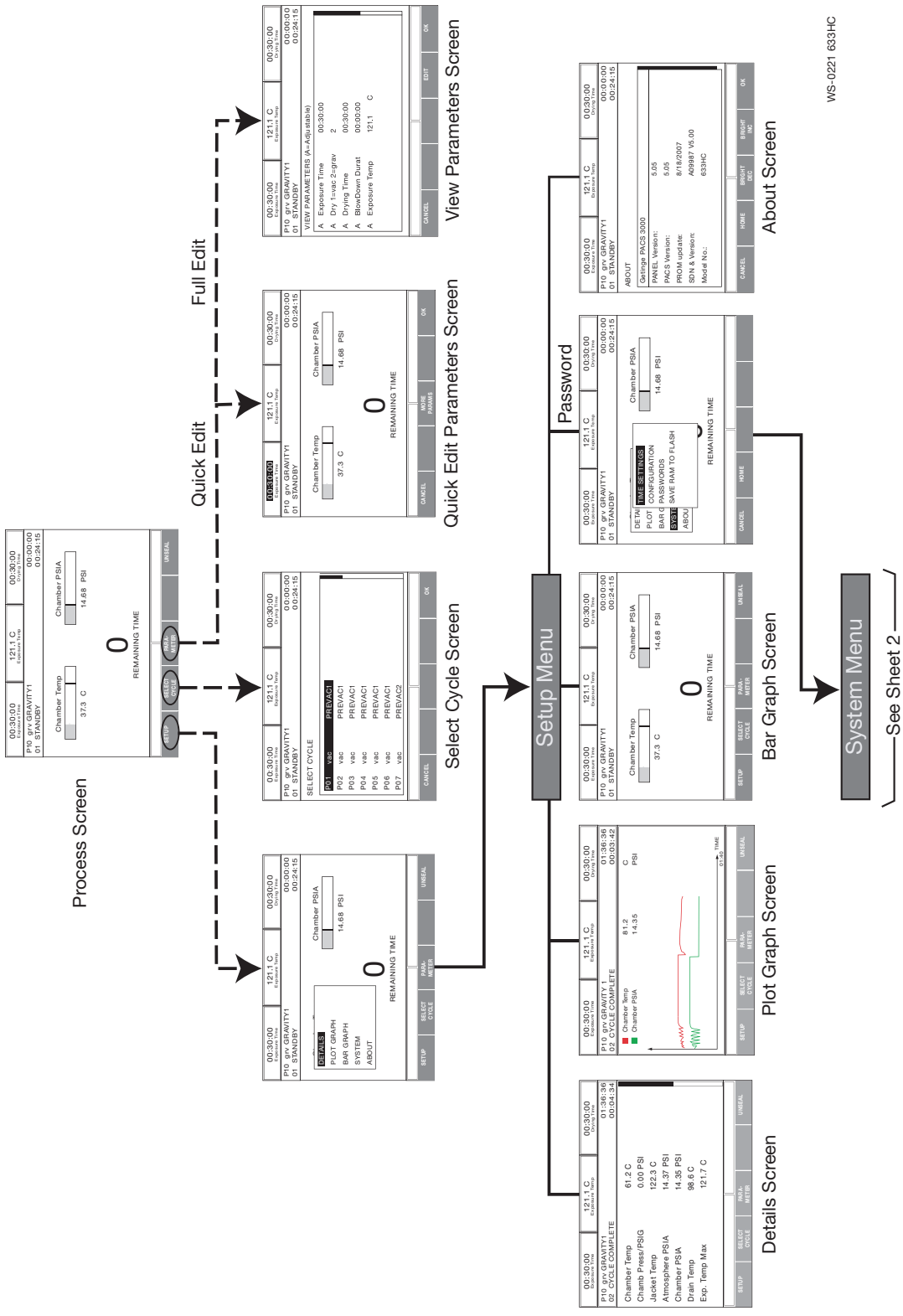
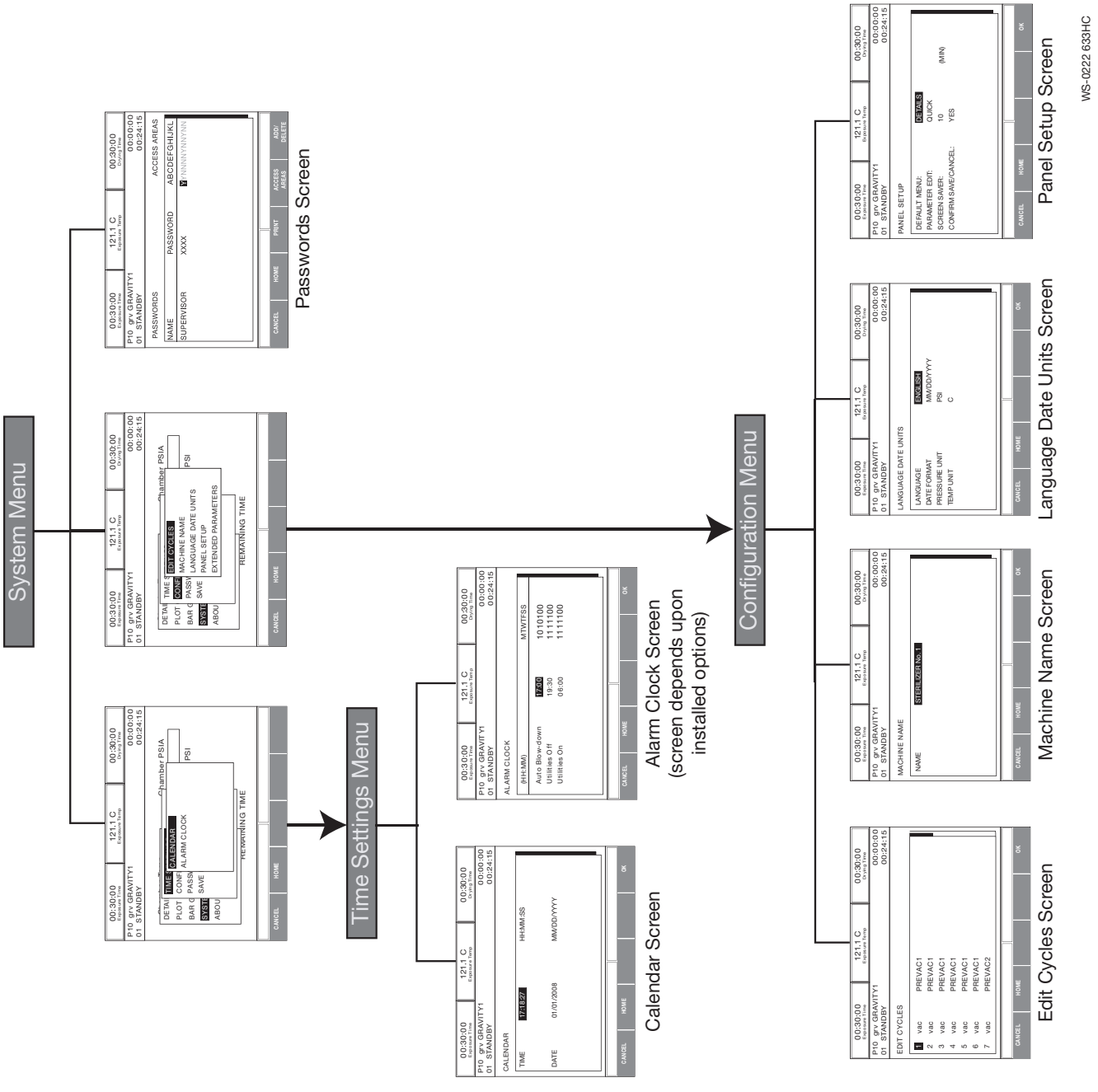


FIGURE D–1, SHEET 2. MENU TREE FOR THE 633HC STEAM STERILIZER



GLOSSARY

Abort

After a process failure, which cancels a cycle, the abort sequence relieves the pressure vacuum in the chamber and returns the sterilizer to standby mode.

Absolute Pressure

The actual pressure present at any given location. This includes the ambient atmospheric pressure at that location plus any artificially induced additional pressure. This is usually measured in pounds per square inch absolute (psia).

Access Level

Indicates the level of programming features available to a specific user type.

Atmospheric Pressure

The absolute pressure outside the chamber (0 psig).

Biological Indicator (BI)

A sterilization process monitoring device consisting of a standardized, viable population of microorganisms (usual bacterial spores) known to be resistant to the mode of sterilization being monitored.

NOTE

Biological indicators are intended to demonstrate whether or not the conditions are adequate to achieve sterilization. A negative biological indicator does not prove that all items in the load are sterile or that they were exposed to adequate sterilization conditions.

Boiler Blow-down

A maintenance procedure consisting of opening a drain valve in a steam boiler at a specified time, while the steam boiler is pressurized, in order to remove mineral deposits and scale.

Bowie and Dick Test

Diagnostic test of dynamic air removal. It tests a steam sterilizer's ability to remove air from the chamber and prevent the re-entry of air.

CE

See Control End (CE).

Celsius

Metric unit of temperature measurement.

Chamber

The inside of the vessel in which goods are sterilized.

Chamber Pressure

The pressure inside the chamber (psia).

Chemical Indicator

A sterilization process monitoring device designed to respond with a characteristic chemical or physical change to one or more of the physical conditions within the sterilizing chamber.

NOTE

A chemical indicator is designed to change when preset critical parameters are delivered. If the chemical indicator does not indicate a pass response, the user needs to determine the cause(s) for the failure, which may include improper loading or sterilizer failure. The "pass" response of a chemical indicator does not prove that the item accompanied by the indicator is sterile.

Control Box (Process Control Unit)

An assembly that contains a microcomputer, power supply, and I/O circuitry and that runs the process control software.

Control End (CE)

The end of the sterilizer that normally has the control surfaces mounted onto it (unless the control surfaces are located remotely). This is also referred to as the load end.

Control Panel

The panel on the front of the sterilizer containing the user panel and indicators.

Cycle

The complete sterilization process that is run on a sterilizer for each load. A cycle is composed of phases, which, when performed in sequence, achieve sterilization conditions.

Cycle Counter

A number that indicates the total number of cycles run on a sterilizer since it was installed. This number is incremented at the start of every cycle. The count cannot be reset.

Cycle Definition

The cycle type and all of its cycle parameters.

Cycle Parameters

The configurable values associated with a cycle. These generally vary from cycle to cycle and may include exposure temperature, exposure time, dry time, blow-down duration, liquid dwell time, and chamber cooldown.

Cycle Performance Record

A printed record maintained throughout each cycle that is run on a sterilizer. The record contains the cycle type, cycle parameters, transition points, any error messages with sign-off space, and "Process Complete" or "Process Failure" heading.

Cycle Type

A pre-defined set of sterilization phases and parameters and/or procedures that are designed to sterilize a specific type of load. The cycle type (prevacuum, Bowie and Dick test, gravity, vacuum, flash, liquids, and vacuum leak test) can be selected by the user of a sterilizer and affects the way in which the cycle is run. See Section 5 "Process Descriptions" for more detailed information.

Daily Counter

A counter which increments when a cycle is started. The daily counter resets at midnight.

Diagnostic Condition	Any condition that results in a message to the user and is not a part of the normal sterilization process.
Diagnostic Message	A message appearing on the display that identifies a failure or fault condition, or an informational message.
Dry Time	The amount of time to be spent in the dry phase. This value is adjustable for each cycle, except a leak test cycle, by users designated by the Supervisor. (The drying phase is not included in a liquids cycle.)
Exposure Temperature	The minimum temperature at which the chamber is held during the exposure phase. This value is adjustable within a range for each cycle, except a leak test cycle, by a user designated by the Supervisor.
Exposure Time	The amount of time to be spent in the exposure phase. This value is adjustable within a range for each cycle, except a leak test cycle, by users designated by the Supervisor.
Fahrenheit	English unit of temperature measurement.
Failure	A malfunction that occurs during a cycle that causes an automatic cycle abort.
Fault	A malfunction that occurs during a cycle that does not cause an automatic cycle abort or a malfunction that occurs when the unit is not in cycle.
Gasket (Door)	Tubular or solid rubber device that forms an airtight seal between the sterilizer chamber and the sterilizer door. The gasket fits into a channel located around the perimeter of the sterilizer door or sterilizer chamber (depending on the model of sterilizer).
Gauge Pressure	The amount of pressure displayed from a pressure sensitive device (gauge). See PSIA (Pounds per Square Inch Absolute) and PSIG (Pounds per Square Inch Gauge).
Headring	The portion of the sterilizer that houses the door gasket.
Jacket	The hollow channels that surround the sterilizer chamber, into which steam is pumped to keep the chamber preheated.
kPa (kiloPascal)	Metric unit of pressure measurement.
Leak	The loss of pressure, vacuum, water, or steam from the sterilizer chamber or piping system, that falls outside of the normal operating range of the sterilizer.
LED (Light Emitting Diode)	A solid-state device that emits light when energized. An LED is similar to an indicator lamp.
Load	The set of items or goods to be sterilized in a single cycle.

Load End	The end of the sterilizer where the goods to be sterilized are normally loaded. This end usually has the control surfaces mounted onto it.
Log	A record of the sterilizer's operation over a period of time. This record may be printed or stored in the computer control memory.
Manual	Document containing information for operation, installation, service, or parts for sterilizers.
Manual Abort	A user-induced abort, which cancels a cycle and initiates the sequence necessary to relieve the pressure vacuum in the chamber and return the sterilizer to standby mode.
Manual Mode	A condition in which the service technician can control operations of the sterilizer that are usually controlled by the computer control system.
No Load Cycle	A cycle with no items in the chamber.
Non-Porous Goods	Unwrapped hard goods such as instruments, basins, cups, tools, test tubes, glassware, etc.
Operator	See User.
Operator Panel	See User Panel.
Parameters	Adjustable or factory set operating ranges for time, temperature, pressure, drying, or other conditions that make up a portion of the sterilization cycle. These values are adjustable within a range by users as designated by the Supervisor. For more detailed information, see Section 5, "Process Descriptions".
Phase	A specific named segment of a sterilization cycle. This includes all of the phases in that particular cycle's phase list. Examples of the phases are: standby, start, purge, conditioning, heat-up, liquid heat-up (liquids cycle only), liquid dwell (liquid cycle only), exposure, liquid exposure (liquids cycle only), exhaust, drying, liquid exhaust (liquids cycle only), equalization (leak test cycle only), leak test (leak test cycle only), air-in, and cycle complete. For more detailed information, see Section 5, "Process Descriptions".
Porous Goods	Soft goods such as cloth goods, towels, gowns, sheets, etc., and hard goods such as instruments, basins, tools, etc., that are wrapped in a porous material.
Power Door	A door assembly that is assisted by a motor.
Preset	Adjusted in advance or at the factory.
Pressure Relief Valve	A valve that automatically opens at a preset pressure to prevent an overpressure condition in the chamber.

Printer	A device that records information occurring during a cycle.
Processing	The repeated act of preparing goods for sterilization, sterilization of the goods, and removal of the sterilized goods.
PSI (Pounds per Square Inch)	English unit of pressure measurement.
PSIA (Pounds per Square Inch Absolute)	An absolute measurement of pressure based on 0 (zero) being a complete vacuum. The absolute pressure at any given location includes ambient pressure plus any artificially induced pressure.
PSIG (Pounds per Square Inch Gauge)	A measurement of pressure based on 0 (zero) being equal to the ambient atmospheric pressure. This 0 (zero) reference varies from absolute according to altitude and barometric conditions. Example: An air pressure gauge reads “0” at normal atmospheric pressure.
Pulse (Pulses, Pulsing)	The alternate conditioning of a load in the chamber first by introducing steam to a pre-determined level, then by exhausting the chamber in order to assist steam penetration of the load and air removal.
Qualified Service Personnel	A Getinge USA service representative or a service provider authorized by Getinge USA.
RE	See Remote End (RE).
Remote End (RE)	The end of the sterilizer opposite the control end. This end is also typically referred to as the unload end.
Scroll	The uninterrupted movement through a list until the desired option is reached.
Sealed	The condition in which the sterilizer door is closed, locked, and pressurized to form an airtight bond with the chamber.
Sediment Screen	A metal screen that fits into the drain at the bottom of the chamber. It is used to trap particles of debris and keep the particles from entering the drain. The sediment screen must be cleaned periodically.
Standby	The condition present when the sterilizer power is turned on and before any commands are entered into the control system. The condition present when the sterilizer is in a wait state between cycles.
Start	The condition that exists when the proper command is given to begin a function of the sterilizer.
Steam Boiler	A device that produces steam by heating water, usually with electrical heating elements. This option is integral to the frame of the sterilizer.

Steam Sterilizer	A device that creates the conditions needed to sterilize a wide range of material and equipment by increasing the pressure and temperature within a closed vessel through the controlled use of steam. In this document, the generic term “sterilizer” refers specifically to a steam sterilizer.
Sterilizer ID	A number that uniquely identifies a sterilizer at a particular installation. The ID appears on the printout.
Strainer	A device placed within a steam or water line used to capture debris. Consists of a removable, tubular metal screen within a plumbing fixture.
Supervisor	Specifies what users can access by creating an identity with a password and giving him or her the rights to access those particular levels.
Unload End	The end of the sterilizer where the sterilized goods are usually removed. Typically referred to as the remote end.
Unwrapped	Goods that are not covered by any material.
User	The individual who is currently operating the sterilizer. Any individual currently performing the steps necessary to bring about a function of the sterilizer.
User Access Level	Indicates the level of programming features available to a specific user as defined by the Supervisor. Access levels available for a user are Parameter Settings, Calendar and Alarm Clock, Configuration, and Password Setup.
User Panel	The display and input device located at the user-accessible locations. The user panel is used to enter data and commands to the process control module.
Utility Shutdown Timer	An electrical device used to turn steam and water supplies on and off at a specified time each day.
Values	The numeric display that corresponds to actual temperature, time, pressure, day, date, or any other variable affecting sterilizer operation that can be monitored electronically and displayed.
Volatile Substances	Substances that vaporize or evaporate quickly.
Warning Code	See Diagnostic Message.
Water Quality	Levels of hardness, resistivity, and other factors in supplied water, which are necessary for optimum efficiency of the steam boiler and other equipment.

Wet Pack

Any pack that exhibits moisture after a completed sterilization cycle and appropriate cooldown. Moisture may be in the form of dampness, droplets, or puddles of water that can be found on or within a pack. Moisture on or within a package has the potential to create a pathway for the migration of microorganisms from the outside to the inside of a sterilized package. For this reason, a wet pack must be considered contaminated.

Wrapped

Goods that are enclosed in a suitable covering material.

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